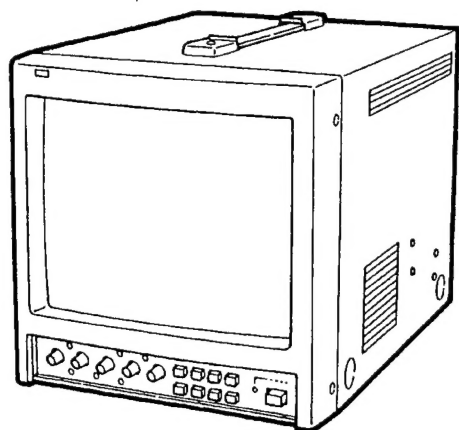


# Service Manual



Colour Video Monitor  
**BT-S1050Y/YG**

**Chassis No. B10**

The service technician is required to read and follow the "Safety Precautions" and "Important Safety Notice" in this service manual.

## Specifications

**Colour system:** NTSC, PAL

**Power Source:** 220–240 V AC, 50/60 Hz  
or 12 V DC

### Power

**consumption:** 0.42A (220–240 V AC)  
3.5A (12 V AC)

### Picture tube:

25cm measured diagonally, flat-square type, 90° deflection, in-line gun, vertical line trio type (phosphor stripe pitch 0.5 mm)

### Audio power

**output:** 1 W (monaural)

### Built-in

**speaker:** 8 cm round ×1  
impedance of 8 Ω

### Effective

**screen size:** Width 175 mm  
Height 137 mm  
Diagonal 222 mm

### Scanning

**frequency:** (H) 15.734 kHz (NTSC)  
15.625 kHz (PAL)  
(V) 59.94 Hz (NTSC)  
50 Hz (PAL)

### Horizontal

**resolution:** 280 TV lines or more  
(Y/C input mode)

### Input terminals

**VIDEO A:** Composite video:  
1 line, BNC connector ×2,  
1 Vp-p, 75 Ω, negative sync  
(bridge connection possible, auto termination)

**VIDEO B:** Composite video:  
1 line, BNC connector ×2,  
1 Vp-p, 75 Ω, negative sync  
(bridge connection possible, auto termination)

### S-VIDEO:

1 line, mini-DIN 4-pin  
connector ×2  
Y: 1.0 Vp-p, 75 Ω  
C: 0.286 Vp-p, 75 Ω (NTSC)  
0.3 Vp-p, 75 Ω (PAL)  
(bridge connection possible, auto termination)

\*S-VIDEO priority when both connected

**AUDIO A:** 1 line (monaural), Phono pin ×2  
0.5 Vrms, high-impedance  
(bridge connection possible)

**AUDIO B:** 1 line (monaural), Phono pin ×2  
0.5 Vrms, high-impedance  
(bridge connection possible)

# Panasonic

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

**External sync:** Composite sync  
1 line, BNC connector ×2  
1-4 Vp-p, 75 Ω  
(bridge connection possible, auto termination)

**Tally/Remote:** 1 line, DIN 8-pin ×1

**Dimensions:** Width 222 mm  
Height 236 mm  
Depth 317mm

**Environmental conditions:** Operation temperature:  
0-40°C  
Operation humidity:  
20-80% (non-condensing)

**Weight:** Approx. 7.4 kg

**Accessory:** AC power cord  
BT-S1050Y: for European  
continent countries  
(approx. 2 m) ×1  
BT-S1050YG: for the United Kingdom  
(approx. 2 m) ×1

Specifications are subject to change without notice.  
Weight and dimensions shown are approximate.

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# SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (▲) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Don't short between the LIVE side ground and ISOLATED(NEUTRAL) side ground or EARTH side ground when repairing.**  
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏏) side GND and EARTH : (⊕) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.  
If above note will not be kept, a fuse or any parts will be broken.
5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B<sub>1</sub> POWER SUPPLY).
6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10k $\Omega$  2W resistor to the anode button.
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

## 9. Isolation Check

### (Safety for Electrical Shock Hazard)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

#### (1) Dielectric Strength Test

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.

(... Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)

This method of test requires a test equipment not generally found in the service trade.

#### (2) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

##### • Alternate Check Method

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500 $\Omega$  10W resistor paralleled by a 0.15 $\mu$ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

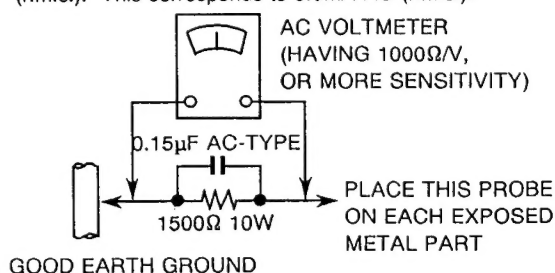


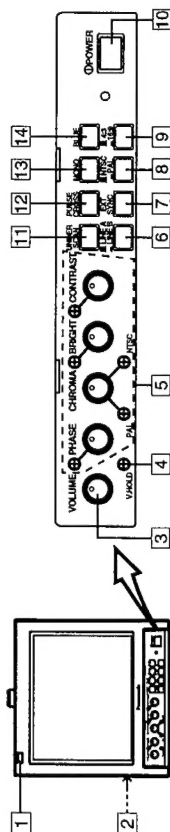
Fig.A

# OPERATING INSTRUCTIONS

## CONTROLS AND FEATURES

### Front

<Front Panel>



#### 1 Tally lamp

Indicates that a control signal is being received. The tally lamp functions when the control signal is input to the TALLY/REMOTE terminal on the rear panel.

#### 2 Speaker

A built-in speaker is located inside the left side panel.

#### 3 VOLUME control

Adjusts the speaker volume.

#### 4 V.HOLD control

Use a small-bladed screwdriver to adjust the image's vertical stability.

#### 5 Picture control section

PHASE, CHROMA, BRIGHT and CONTRAST controls are available.

The standard setting mode can be obtained by setting each control to the centre click position. To adjust a setting, insert a small-bladed screwdriver into the space around the knob and turn it to the desired position. When adjusting, use the small-bladed screwdriver and insert it into the control hole around the required control knob.

##### ■ PHASE control

Adjusts picture hue.

##### ■ CHROMA control

Adjusts picture colour density.

##### ■ BRIGHT control

Adjusts picture brightness.

##### ■ CONTRAST control

Adjusts picture contrast.

#### Notes:

The PHASE control is effective only in the NTSC colour system mode.  
The standard CHROMA setting can be adjusted to suit the NTSC or PAL colour system.

#### 10 POWER switch/POWER indicator

Press this switch to turn the power on or off.

ON ( ) : Power is turned on and the power indicator lights.

OFF ( ) : Power is turned off and the power indicator goes off.

#### Note:

If the battery expires while the monitor is operated with DC power supply (the voltage level drops), the green indicator changes to orange, then to red. When the POWER indicator changes to red, the power automatically goes off. Make sure you switch off the power before replacing the battery.

#### 11 UNDER SCAN switch

Selects the scanning mode (over scan screen or under scan screen).

( ) : Over scan screen

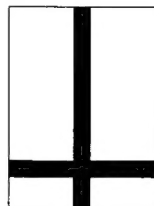
( ) : Under scan screen

#### 12 PULSE CROSS switch

Checks the retrace period (sync signal) by delaying the input signal.

( ) : Normal screen

( ) : Retrace period display screen



#### 13 MONO (colour off) switch

Selects the screen mode (colour or monochrome screen). Useful when you want to check the white balance.

( ) : Colour screen

( ) : BW screen

#### 14 BLUE (blue check) switch

Selects the screen mode (normal or monochrome blue screen). Useful when you want to check the chroma and phase adjustment.

( ) : Normal screen

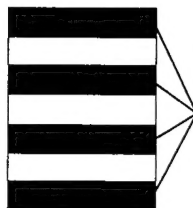
( ) : Monochrome blue screen

#### Note:

The PHASE adjustment is effective only in the NTSC colour system mode.

#### [How to adjust]

1. Select the monochrome blue screen mode and input colour bar signals in the order of brightness.
2. Adjust the CHROMA and PHASE controls until the density and brightness of each blue bar are the same.

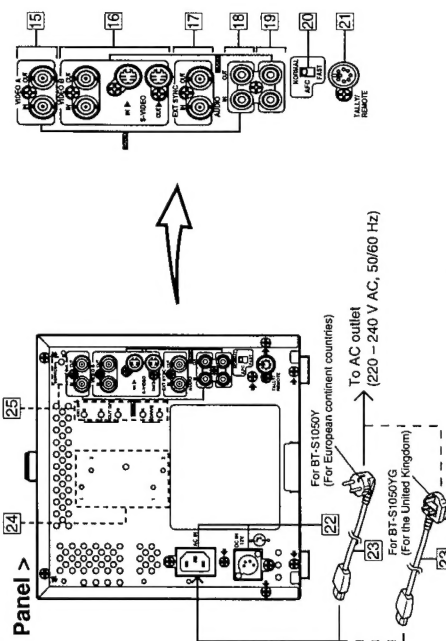


Adjust the blue bars to the same density and brightness.

# CONTROLS AND FEATURES (cont'd)

## Rear

< Rear Panel >



### 15 VIDEO A terminals

Video signal input (IN) and output (OUT) terminals.  
The output terminal is bridge-connected.  
IN : Video signal input terminal  
OUT : Bridge-connected video signal output terminal

#### Notes:

For corresponding audio signals, use the AUDIO A terminals [18].  
Also refer to the Basic Connection Example.

### 16 VIDEO B terminals

Video signal input (IN) and output (OUT) terminals for both composite and S-VIDEO (Y/C) terminals. Each output terminal is bridge-connected.

#### [BNC terminals]

IN : Video signal input terminal  
OUT : Bridge-connected video signal output terminal  
[S-VIDEO (mini-DIN 4-pin) terminals]  
IN : S-VIDEO (Y/C) signal input terminal  
OUT : Bridge-connected S-VIDEO signal output terminal

#### Notes:

For corresponding audio signals, use the AUDIO B terminals [19].  
S-VIDEO (Y/C) terminal has priority.  
Also refer to the Basic Connection Example.

### S-VIDEO terminal pin layout

| Pin No. | Signal  |
|---------|---------|
| 1       | GND (Y) |
| 2       | GND (C) |
| 3       | Y       |
| 4       | C       |

### 17 EXT SYNC terminals

External sync signal input (IN) and output (OUT) terminals.  
The output terminal is bridge-connected.  
IN : Input terminal for the external sync signal  
OUT : Bridge-connected output terminal

#### Notes:

Also refer to the Basic Connection Example.

### 18 AUDIO A terminals

Input (IN) and output (OUT) terminals for the audio signal corresponding to the VIDEO A terminals [15].  
The output terminal is bridge-connected.  
IN : Audio input terminal  
OUT : Bridge-connected output terminal

#### Notes:

For corresponding video signals, use the VIDEO A terminals [15].

### 19 AUDIO B terminals

Input (IN) and output (OUT) terminals for the audio signal corresponding to the VIDEO B terminals [16].  
The output terminal is bridge-connected.  
IN : Audio input terminal  
OUT : Bridge-connected output terminal

#### Notes:

For corresponding video signals, use the VIDEO B terminals [16].

### 20 AFC switch

Selects the AFC (Automatic Frequency Control) time constant for the horizontal sync circuit.  
Correct the skewed portion of the picture.  
NORM position : Normal mode  
FAST position : Fast mode (fast: smaller time constant)

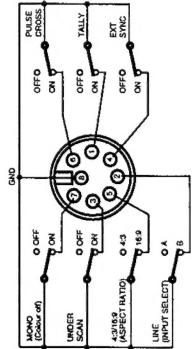
### 21 TALLY/REMOTE terminal

External control terminal (DIN 8-pin). Tally lamp, VIDEO AB (input selection), Under Scan, External Sync, 4:3/16:9 (aspect ratio), Pulse Cross, and MONO modes can be controlled from an external unit.

#### Note:

When you're controlling the monitor externally via the TALLY/REMOTE terminal, set all corresponding switches on the front panel to the OFF (■) position. (Which switch is pressed first has priority so remote switches may not function if the panel switches are ON (▲) position.)

### TALLY/REMOTE terminal pin layout



### 22 Power input connector

Supply power to either the AC IN or DC IN 12 V connector.

#### [AC IN]

Connect the provided AC power cord between the AC IN connector and an AC outlet (220 ~ 240 V AC, 50/60 Hz).

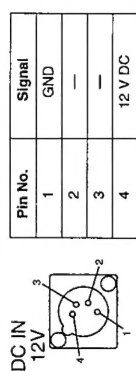
#### [DC IN 12V]

Connect the 12 V DC power plug to the DC IN 12V connector.

#### Notes:

See your dealer for more information on 12 V DC power supply.  
When both AC IN and DC IN connectors are used, the AC input has priority.  
The DC power supply does not automatically take over if an AC outlet is unplugged or the AC power is cut off when both AC and DC power supplies are connected. In this case, press the POWER switch to set to OFF, then press it again to turn the power ON.

### DC IN 12V connector pin layout



### 23 Power cord

Connect the provided power cord (220 ~ 240 V AC, 50/60 Hz) to the AC IN connector.

#### Notes:

The BT-S1050Y power cord is for use in European continent countries.  
The BT-S1050YG power cord is for use in the United Kingdom only. (The power cord for the United Kingdom has a fuse built into the plug to the AC outlet.)

### 24 External battery mounting holes

Attach an external battery to either pair of holes (1 or 2) to use 12 V DC power (depending on the type of battery).

#### Notes:

External batteries manufactured by PAG or Anton Bauer are available.  
See your dealer for details.

### 25 Switch/control adjustment holes for service personnel

For adjustment of SERVICE switch, CUT OFF (B, R, G) control and DRIVE (R, G) control during servicing.

#### Note:

These controls are exclusively for the use of service personnel. Do not attempt to adjust them yourself.



# SPECIFIC SERVICE INSTRUCTIONS

## DISASSEMBLY PROCEDURE

### [CAUTION]

- \* Even with the power switch off, some parts of the set are live. Be sure to disconnect the power cord from the AC outlet before disassembly and reassembly.

### REMOVING THE TOP COVER

1. Take out 4 screws (A) and 4 screws (B).
2. Slightly spread the bottom of the top cover. Shift the cover rearward and raise it upward to remove it.

### REMOVING THE REAR PANEL

- Remove the top cover.

  1. Take out 4 screws (C).
  2. Shift the top portion of the rear panel slightly rearward and raise it upward to remove it.

### REMOVING THE GUARD SHEET

- Remove the top cover and rear panel.

  1. Pull out the rivet.
  2. Shift the guard sheet upward to remove it.

### REMOVING THE BOTTOM COVER

- After removing the top cover, rear panel and terminal bracket, follow the steps given below.

  1. Place the front surface downward, then stand the bottom cover while facing it toward you.  
At this time, care must be exercised not to damage the front panel and CRT surface.
  2. Loosen the 2 screws marked (G) as shown in the figure.
  3. After pulling the rear panel side of the bottom cover toward you slightly, keep the chassis base from the bottom cover slightly.
  4. When the chassis base has been kept from the bottom cover slightly, pull the bottom cover upward while leaving the situation as it is, then remove the bottom cover.
  5. When the bottom cover has been removed, you can check the main PWB and control PWB in such a situation.

### REMOVING THE TERMINAL BRACKET

- Remove the top cover and rear panel.

  1. Take out 2 screws (D), 7 screws (E) and 1 screw (F).
  2. Slightly shift the terminal bracket rearward and raise it upward to remove it.

### REMOVING THE CHASSIS BASE WITH THE CHASSIS

- Remove the top cover.
- Remove the rear panel.

  1. Remove the claws located at the left and right sides of the bottom of the front panel toward outside.
  2. While pulling the chassis base with the chassis rearward, remove it.

### REMOVING THE POWER SW

- Remove the top cover.
- Remove the rear panel.
- Remove the chassis base even with the power switch off.

  1. Take out the screw (H).
  2. Remove the POWER SW sheet.
  3. Press the claws (Y) and (Z) to detach the POWER SW 2 PWB. Then slightly raise the POWER SW 2 PWB.
  4. The POWER SW 1 PWB can be removed by raising it after pressing the claws (X). (see Fig. 1)

### REMOVING CONTROL PWB

- Remove the top cover.
- Remove the rear panel.
- Remove the chassis base.

  1. The CONTROL PWB can be removed by simply raising it.

### REMOVING THE CRT

- Remove the top cover.
- Remove the rear panel.
- Remove the chassis base.

  1. Take out 4 screws (K).
  2. Remove the CRT from the front panel.

### REMOVING THE SPEAKER

- Remove the top cover.
- Remove the rear panel.
- Remove the terminal bracket.

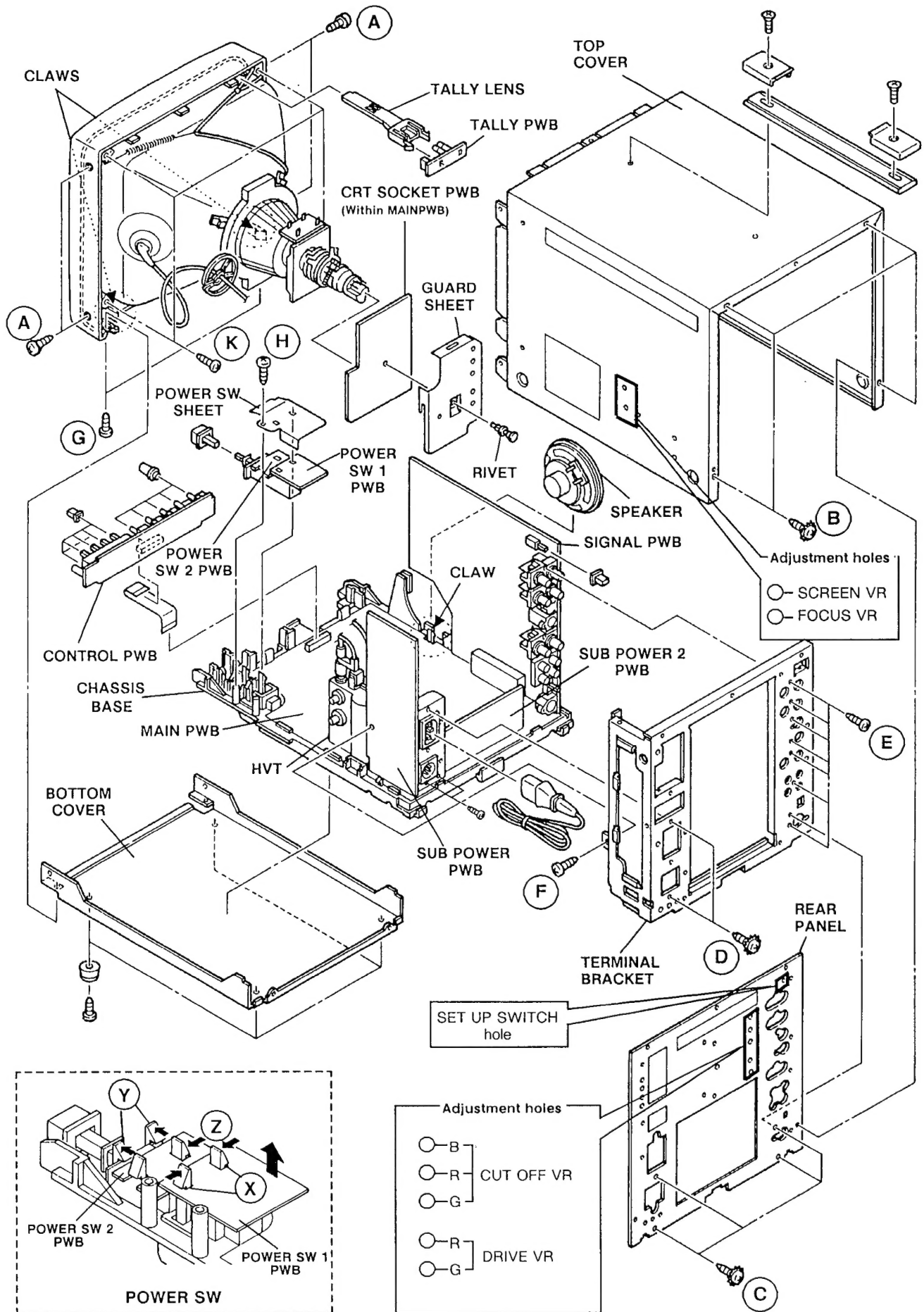
  1. Remove the speaker code from the speaker.
  2. Remove the signal PWB.
  3. Disengage the claw under the speaker.
  4. Pull up the speaker.

### [CAUTION]

- \* When erecting the chassis, be careful so that there will be no contacting with other PW board.
- \* Before turning on power, make sure that the wire connector, CRT earth wire and other connectors properly connected.

### WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.



# REPLACEMENT OF CHIP COMPONENT

## CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

## SOLDERING IRON

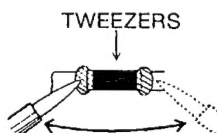
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

## REPLACEMENT STEPS

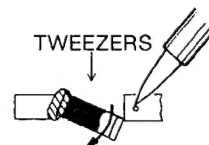
### 1. How to remove Chip parts

#### ●Resistors, capacitors, etc

- (1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

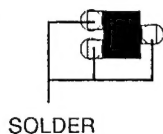


- (2) Shift with tweezers and remove the chip part.

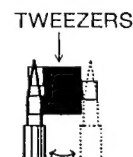


#### ●Transistors, diodes, variable resistors, etc

- (1) Apply extra solder to each lead.



- (2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

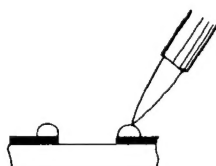


**Note:** After removing the part, remove remaining solder from the pattern.

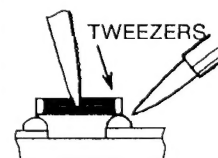
### 2. How to install Chip parts

#### ●Resistors, capacitors, etc

- (1) Apply solder to the pattern as indicated in the figure.



- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.



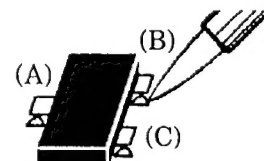
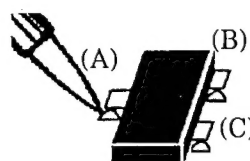
#### ●Transistors, diodes, variable resistors, etc

- (1) Apply solder to the pattern as indicated in the figure.

- (2) Grasp the chip part with tweezers and place it on the solder.

- (3) First solder lead A as indicated in the figure.

- (4) Then solder leads B and C.



# SERVICE ADJUSTMENTS

## PRIOR TO STARTING ADJUSTMENT

1. Supply power to the set and measuring instruments and allow to warm up for at least 30 minutes.
2. Confirm the proper AC power voltage is being supplied.
3. Use care not to disturb controls and switches not mentioned in the adjustment items.
4. Refer to adjustment settings and set user operated controls (bright, contrast, chroma, etc.) to the indicated positions.

## TOOLS AND FIXTURES FOR ADJUSTMENT

- DC voltmeter (digital voltmeter)
- Oscilloscope
- Signal generator (PAL / NTSC systems)
  - Colour bar and split colour bar patterns
  - Crosshatch pattern
  - Cross pattern
  - Red raster pattern
  - Green raster pattern
  - Blue raster pattern
  - Phillips pattern (including R-Y and B-Y)
  - TV resolution pattern
- Colour analyzer

## ADJUSTMENT SETTINGS

|                          |                       |                   |        |
|--------------------------|-----------------------|-------------------|--------|
| <b>1. Front controls</b> |                       | <b>3. Rear SW</b> |        |
| CONTRAST                 | Center click position | AFC               | NORMAL |
| BRIGHT                   | Center click position | SERVICE           | OFF    |
| CHROMA                   | Center click position |                   |        |
| PHASE                    | Center click position |                   |        |
| VOLUME                   | Center                |                   |        |
| <b>2. Front SW</b>       |                       |                   |        |
| UNDER SCAN               | OFF                   |                   |        |
| PULSE CROSS              | OFF                   |                   |        |
| COLOR OFF → MONO         | OFF                   |                   |        |
| BLUE CHECK → BLUE        | OFF                   |                   |        |
| INPUT A/B → LINE A/B     | A                     |                   |        |
| EXIT SYNC → EXT SYNC     | OFF                   |                   |        |
| NTSC / PAL               | PAL                   |                   |        |
| 4:3 / 16:9               | 4:3                   |                   |        |

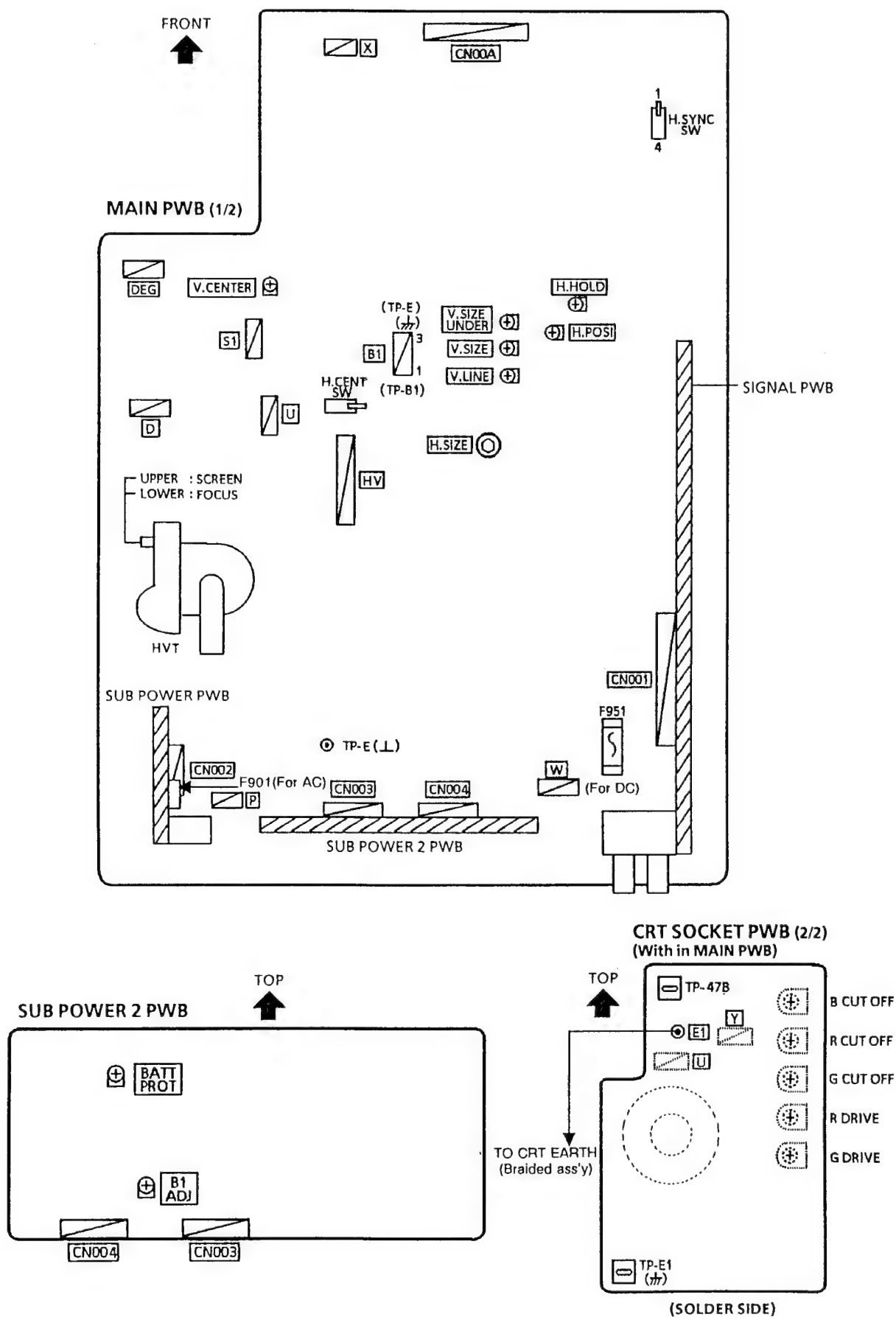
## FOCUS, SCREEN, CUT OFF AND DRIVE, SERVICE SWITCH ADJUSTMENT HOLES

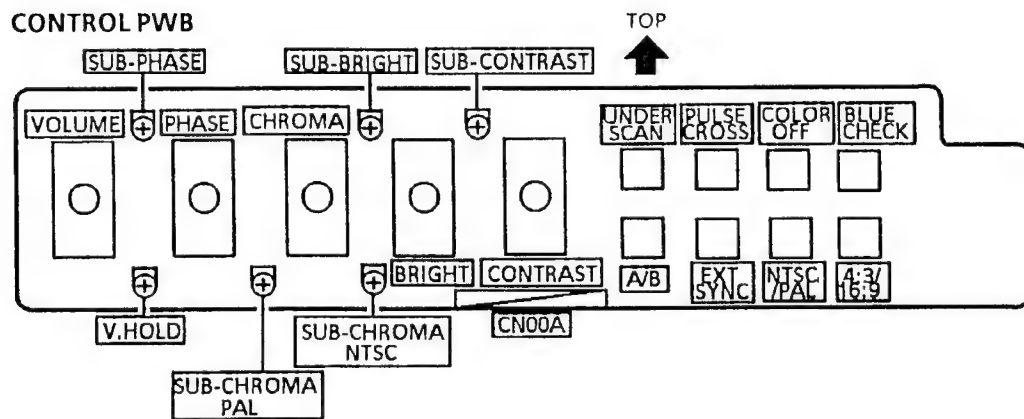
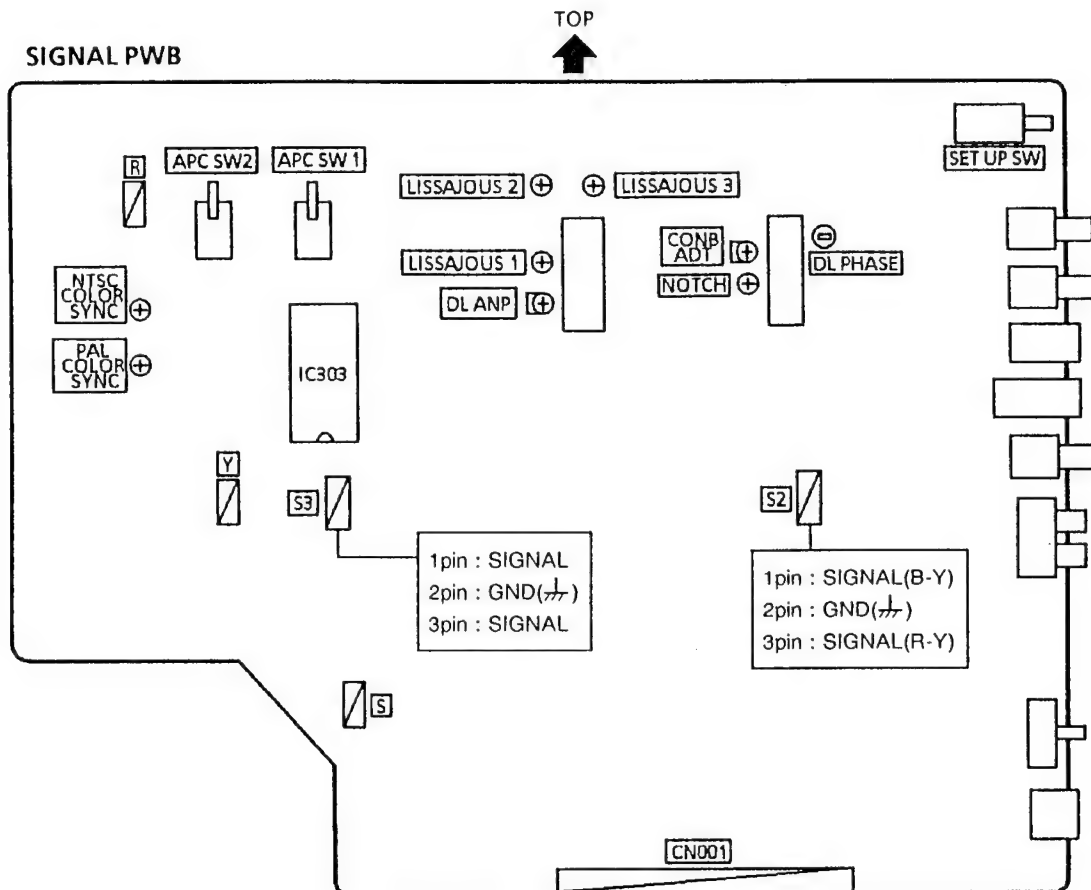
- The Focus and Screen adjustment holes are on the side of the set (see Page 5).
- The Cut off and Drive adjustment holes are on the rear panel of the set (see Page 5).
- The SERVICE SWITCH hole is on the rear panel of the set (see page 5).

### [CAUTION]

Be sure to use a non-metallic screwdriver for adjusting there VRs. A metallic driver can cause damage by shorting.

## ADJUSTMENT LOCATIONS

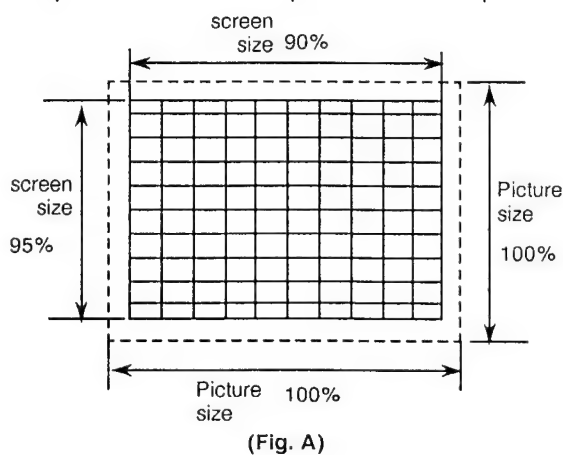




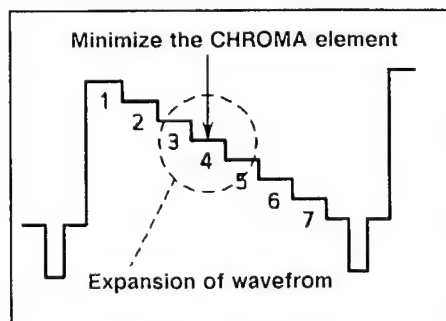
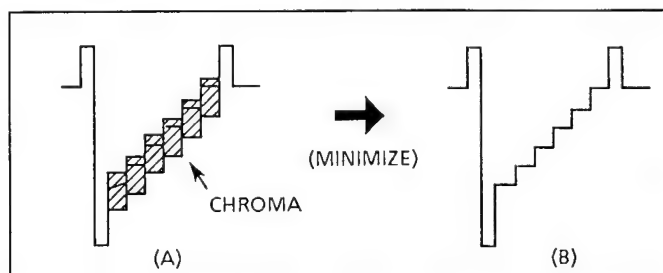
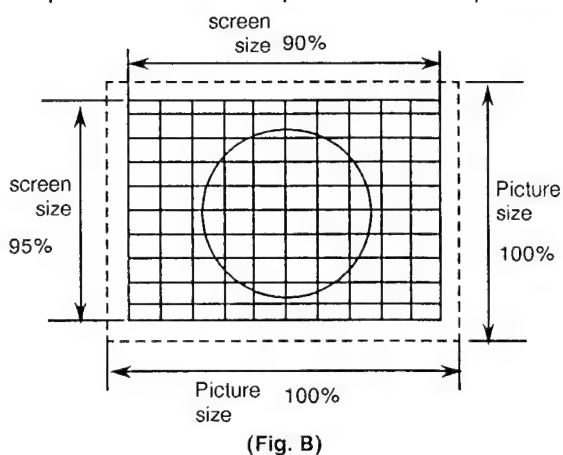
## ADJUSTING STEP

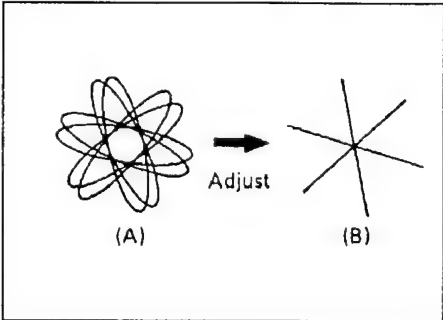
| Item                           | Test equipment                   | Test points   | Adjustment locations                 | Adjustment procedure  |
|--------------------------------|----------------------------------|---|--------------------------------------|---|
| B1 voltage check (AC)          | DC Voltmeter<br>Signal generator | TP-B1(1 pin)<br>TP-E(⚡)(3 pin)<br>[B1] connector<br>in MAIN PWB]  |                                      | <ul style="list-style-type: none"> <li>Make sure that input power is 230V AC, 50Hz.</li> </ul> <ol style="list-style-type: none"> <li>Input an all-black signal.</li> <li>Confirm DC <math>114.8V \begin{smallmatrix} +1.0V \\ -1.3V \end{smallmatrix}</math> between TP-B1 and TP-E(⚡).</li> </ol>   |
| B1 voltage check (DC)          | DC Voltmeter<br>Signal generator | TP-B1 (1 pin)<br>TP-E(⚡)(3 pin)<br>[B1] connector<br>in MAIN PWB] | B1 ADJ VR<br>[SUB POWER 2 PWB]       | <ul style="list-style-type: none"> <li>Make sure that input power is <math>13V \pm 0.1V</math> DC.</li> </ul> <ol style="list-style-type: none"> <li>Input an all-black signal.</li> <li>Connect DC voltmeter TP-B1 and TP-E(⚡).</li> <li>Turn the B1 ADJ VR from rearward and bring B1 voltage to <math>DC \ 114.8V \pm 0.1V</math>.</li> <li>Make sure that the B1 voltage is <math>DC \ 114.8V \begin{smallmatrix} +1.0V \\ -1.3V \end{smallmatrix}</math> when the DC power supply voltage has been changed in the range of <math>10.4V \sim 18.0V</math>.</li> </ol> <ul style="list-style-type: none"> <li>Don't use metal screw driver.</li> </ul>   |
| DC Shut off voltage adjustment | DC Voltmeter<br>Signal generator |   | BATT. PROT VR<br>[SUB POWER 2 PWB]   | <ul style="list-style-type: none"> <li>Turn the BATT.PROT VR fully clock wise from rearward in advance.</li> <li>Make sure that input power is <math>12V \pm 0.1V</math> DC.</li> </ul> <ol style="list-style-type: none"> <li>Input an all-black signal.</li> <li>Connect digital voltmeter to DC terminal.</li> <li>Adjust DC power supply voltage bring to <math>DC \ 10.3 \pm 0.01V</math> (digital volt mete measured).</li> <li>Slightly turn the BATT.PROT VR counter-clock wise until power shut off. (POWER LED red lights)</li> <li>Turn on the power again and make sure that the POWER LED indicates a green color when the input power is 12V.</li> </ol> <p>※ When regaining the power supply, slightly increase the output voltage of the DC power supply, then turn the main switch of the TV set OFF before turning it ON again.</p> |
| Focus adjustment               | Signal generator                 |   | FOCUS VR<br>[HVT]                    | <ol style="list-style-type: none"> <li>Input a crosshatch signal.</li> <li>Turn the FOCUS VR to the range of best focus of the crosshatch signal.</li> </ol>  |
| H.HOLD adjustment              | Signal generator                 |   | H.SYNC SW<br>H.HOLD VR<br>[MAIN PWB] | <ol style="list-style-type: none"> <li>Input a monoscope pattern signal.</li> <li>Turn H.SYNC SW to left (4) side.</li> <li>Adjust the H.HOLD VR so that the monoscope pattern turn to normal in the screen.</li> <li>Turn H.SYNC SW to right side.</li> <li>Make sure that the normal picture can be displayed on the CRT immediately when the input select A / B SW was changed.</li> <li>Repeat the steps 2~4 above, if necessary.</li> </ol>  |

| Item                             | Test equipment   | Test points | Adjustment locations                                   | Adjustment procedure  |
|----------------------------------|------------------|-------------|--|---|
| V.HOLD adjustment                | Signal generator |             | V.HOLD VR<br>[FRONT PANEL]                             | <ol style="list-style-type: none"> <li>1. Input a NTSC colour bar signal.</li> <li>2. Switch the NTSC / PAL SW on the front panel to the PAL side and the 4:3 / 16:9 SW on the front panel to the 16:9 side. (At this time, make sure that the colour in the picture on the CRT has died away and the vertical amplitude has been diminished in size.)</li> <li>3. Turn the V.HOLD VR on the front panel clockwise from its minimum position and stop it at the position where the vertical synchronization has been obtained.</li> <li>4. Return the NTSC / PAL SW to the NTSC side and the 4:3 / 16:9 SW to the 4:3 side, respectively, and make sure that the picture condition on the CRT is normal. On each mode (PAL, NTSC, UNDER SCAN, 16:9, etc.), confirm that the picture condition on the CRT is normal.</li> </ol>  |
| H. Size and H. Center adjustment | Signal generator |             | H. SIZE COIL<br>H. POSI VR<br>H. CENT SW<br>[MAIN PWB] | <ul style="list-style-type: none"> <li>• Perform after completing brightness and contrast adjustments.</li> </ul> <ol style="list-style-type: none"> <li>1. Input a NTSC crosshatch signal.</li> <li>2. Press the UNDER SCAN SW and the PULSE CROSS SW on the front panel, then roughly adjust the H. CENT SW to center the picture on the CRT. (At the same time, input PAL crosshatch signal and make sure that the center has not got out of place excessively.)</li> <li>3. After turning off the UNDER SCAN SW and the PULSE CROSS SW, adjust the H. POSI VR to center the picture on the CRT.</li> <li>4. Adjust the H. SIZE COIL to set the horizontal size to 90% (Fig. A)</li> <li>5. Turn on the UNDER SCAN SW and set the BRIGHT VR to a maximum and the CONTRAST VR to a minimum. Then, adjust the H.POSI VR so that the picture area on the CRT is positioned at the center of the raster.</li> <li>6. Turn off the UNDER SCAN SW and set the BRIGHT VR and the CONTRAST VR to the click position. Then, make sure that the horizontal position falls within the tolerance. If the horizontal position has been out of place, adjust the H.CENT SW to correct the position.</li> </ol> |

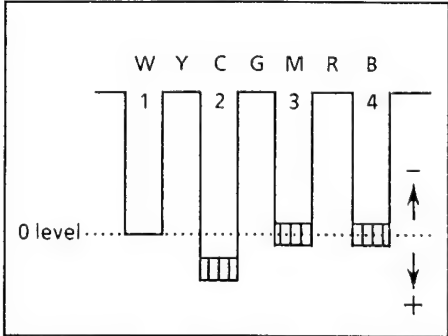
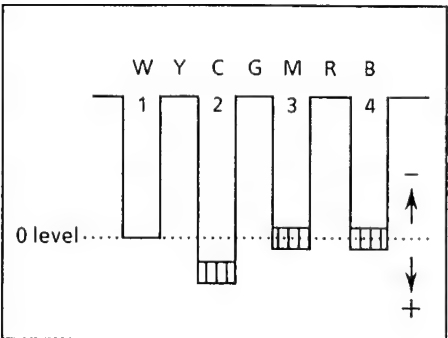


| Item   | Test equipment                   | Test points  | Adjustment locations                                  | Adjustment procedure  |
|--|----------------------------------|--|---|---|
| V. Size<br>V. Center and<br>V. Linearity<br>adjustment | Signal generator                 |  | V. SIZE VR<br>V. CENTER VR<br>V. LIN VR<br>[MAIN PWB] | <ul style="list-style-type: none"> <li>Perform after completing brightness and contrast adjustments.</li> </ul> <ol style="list-style-type: none"> <li>Input a NTSC crosshatch circle signal.</li> <li>Adjust vertical linearity with the V. LIN VR.</li> <li>Adjust the V. CENTER VR to center the Picture on the CRT.</li> <li>Adjust the V. SIZE VR to set the vertical size to 95% (Fig. B).</li> <li>If necessary, readjust the V. LIN VR.</li> <li>Press the UNDER SCAN SW and adjust the V. SIZE UNDER VR so that circle on the screen becomes the same diameter vertically and horizontally.</li> <li>Input the PAL crosshatch circle signal and make sure that the vertical size of the circle falls within 92~97% when the UNDER SCAN SW is turned off, and that the diameter of the circle is the same vertically and horizontally when the UNDER SCAN SW is turned ON.</li> </ol> |
|  |                                  |  |   |   |
| Notch circuit<br>adjustment                            | Signal generator<br>Oscilloscope | [S2] connector<br>1&3 pin : Signal<br>2 pin : GND(⚡)<br>[SIGNAL PWB] | NOTCH<br>[SIGNAL PWB]                                 | <ol style="list-style-type: none"> <li>Input a PAL colour bar signal.</li> <li>Switch the NTSC / PAL SW on the front panel to the PAL side.</li> <li>Connect an oscilloscope to [S2] connector 1 or 3 pin.</li> <li>Adjust the NOTCH so that the figure is altered to (B) from (A).</li> </ol>  |
|  |                                  |  |   |   |
| COMB FILTER<br>adjustment                              | Signal generator<br>Oscilloscope | [S2] connector<br>1&3 pin : Signal<br>2 pin : GND(⚡)<br>[SIGNAL PWB] | DL PHASE<br>TRANSF<br>COMB A.D.J<br>[SIGNAL PWB]      | <ol style="list-style-type: none"> <li>Input a NTSC colour bar signal.</li> <li>Switch the NTSC / PAL SW on the front panel to the NTSC side.</li> <li>Connect the oscilloscope to [S2] connector. In case the waveform can be expanded by the oscilloscope, expand the waveform to allow easy adjustment.</li> <li>Adjust the DL PHASE TRNASF so that the CHAROMA element becomes minimum.</li> <li>With the COMB A.D.J , adjust the CHAROMA element so that the element becomes minimum.</li> <li>Repeat steps 3 and 4.</li> </ol>  |
|  |                                  |  |   |   |



| Item   | Test equipment                   | Test points  | Adjustment locations  | Adjustment procedure   |
|--|----------------------------------|--|---|--|
| COLOUR SYNC adjustment   | Signal generator<br>Oscilloscope |  | APC SW 1 & 2<br>NTSC COLOUR SYNC<br>[SIGNAL PWB]  | <ol style="list-style-type: none"> <li>1. Input a NTSC colour bar signal.</li> <li>2. Switch the NTSC / PAL SW on the front panel to the NTSC side.</li> <li>3. Switch the APC SW 1 &amp; 2 to the S side.</li> <li>4. While adjusting the NTSC COLOR SYNC, observe the picture in the screen : then stop the adjustment when the picture has been changed to a complete color-bar pattern from a striped pattern.</li> <li>5. Then return the APC SW 1 &amp; 2 to the N side.</li> <li>6. By switching the input select A / B SW twice, make sure that the complete colour-bar pattern obtained in the step 4 above will appear immediately.</li> </ol>   |
| APC adjustment   | Signal generator<br>Oscilloscope | <b>S3</b> connector<br>1 pin :<br>SIGNAL(B-Y)<br>2 pin :<br>GND( $\perp$ )<br>3 pin :<br>SIGNAL(R-Y) | APC SW 1 & 2<br>DL LEVEL VR<br>LISSAJOUS 2 & 3<br>[SIGNAL PWB]  | <ol style="list-style-type: none"> <li>1. Input a PAL colour bar signal.</li> <li>2. Switch the NTSC / PAL SW on the front panel to the PAL side.</li> <li>3. Connect the probes of a dual-trace oscilloscope to <b>S3</b> connector.</li> <li>4. Set the APC SW 1, SW 2 to S.</li> <li>5. Set the oscilloscope tie axis to X-Y coordinates.</li> <li>6. Alternately adjust the DL LEVEL VR and LISSAJOUS 2 &amp; 3 to obtain the waveform B indicated in the figure.</li> <li>7. Return the APC SW1, SW2 to N.</li> </ol>   |
|  |                                  |  |   |  |
| White balance (low Light) adjustment   | Signal generator                 |  | SERVICE SW<br>[SIGNAL PWB]<br><br>R CUT OFF VR<br>G CUT OFF VR<br>B CUT OFF VR<br>[CRT SOCKET PWB]<br><br>SCREEN VR<br>[MAIN PWB] | <ol style="list-style-type: none"> <li>1. Input a monoscope pattern signal.</li> <li>2. Set the SET UP SWITCH on the signal PWB to S to produce a single horizontal line.</li> <li>3. Turn the RED, GREEN and BLUE CUT OFF VRs fully counter-clockwise.</li> <li>4. Turn the SCREEN VR fully counter-clockwise, then gradually turn it clockwise until a single blue, green or red horizontal line just slightly appears.</li> <li>5. Turn the CUT OFF VR corresponding to the initial colour slightly clockwise.</li> <li>6. Adjust the CUT OFF VRs of the other two colors to where the three overlapped colors appear white.</li> <li>7. Return the SET UP SWITCH to normal(N).</li> <li>8. Set for a dark screen and fine adjust the R, G and B CUT OFF VRs to obtain the optimum white colour.</li> </ol> |

| Item                                  | Test equipment                                 | Test points                           | Adjustment locations                         | Adjustment procedure  |
|---------------------------------------|--|---------------------------------------|--|---|
| White balance (high light) adjustment | Signal generator<br>(colour temperature meter) |                                       | R DRIVE VR<br>G DRIVE VR<br>[CRT SOCKET PWB] | <ol style="list-style-type: none"> <li>1. Input a monoscope pattern signal.</li> <li>2. Adjust the RED and GREEN DRIVE VRs to produce an overall white screen. <ul style="list-style-type: none"> <li>• If a colour temperature meter is available : Measure the center of the screen with the sensor of the colour temperature meter. Adjust the RED and GREEN DRIVE VRs to obtain D6500° K.</li> </ul> </li> <li>3. Turn the contrast and brightness VRs. Confirm correct white balance tracking from low light to high light.</li> </ol> |
| Brightness adjustment                 | Signal generator                               |                                       | SUB BRIGHT VR<br>[CONTROL PWB]               | <ul style="list-style-type: none"> <li>• Perform after completing white balance adjustments.</li> </ul> <ol style="list-style-type: none"> <li>1. Input a split colour bar signal.</li> <li>2. Adjust the SUB BRIGHT VR to eliminate illumination in the 0% black component.</li> </ol>   |
| Contrast adjustment                   | Signal generator<br>Oscilloscope               | TP-47B<br>TP-E(⚡)<br>[CRT SOCKET PWB] | SUB CONT. VR<br>[CONTROL PWB]                | <ol style="list-style-type: none"> <li>1. Input a colour bar signal (set for 0.525V between black and white).</li> <li>2. Connect an oscilloscope to TP-47B and TP-E(⚡).</li> <li>3. Adjust the SUB CONTRAST VR to set the level indicated in the figure to 21V.</li> </ol>   |

| Item  | Test equipment                   | Test points                               | Adjustment locations                            | Adjustment procedure   |
|---|----------------------------------|---|---|--|
| Chroma adjustment   | Signal generator<br>Oscilloscope | TP-47B<br>TP-E1(↗)<br>[CRT SOCKET<br>PWB] | SUB CHROMA VR<br>[CONTROL PWB]                  | <ol style="list-style-type: none"> <li>1. Input a PAL colour bar signal.</li> <li>2. Switch the NTSC / PAL SW on the front panel to the PAL side.</li> <li>3. Connect an oscilloscope to TP-47B and TP-E1 (↗).</li> <li>4. With the no. 1 level W taken as 0 level, adjust the SUB CHROMA (PAL) VR to set no. 4 B to 0 level.</li> </ol>   |
|    |                                  |   |   |  |
| COLOUR TINT adjustment  | Signal generator<br>Oscilloscope | TP-47B<br>TP-E(↗)<br>[CRT SOCKET<br>PWB]  | SUB PHASE VR<br>SUB CHAROMA VR<br>[CONTROL PWB] | <ol style="list-style-type: none"> <li>1. Input a NTSC colour bar signal.</li> <li>2. Switch the NTSC / PAL SW on the front panel to the PAL side, and turn the BLUE CHECK SW on.</li> <li>3. Connect an oscilloscope to TP-47B and TP-E (↗).</li> <li>4. With the no. 1 level W taken as 0 level, adjust the SUB PHASE VR to set no. 3 M to 0 level.</li> <li>5. With the no. 1 level W taken as 0 level, adjust the SUB CHROMA (NTSC) VR to set no. 4 B to 0 level.</li> </ol> |
|  |                                  |   |   |  |

# PURITY, CONVERGENCE

## PURITY ADJUSTMENT

Before adjusting :

- Turn the screen VR to where the raster dose not appear.
- Set the PULSE CROSS SW to ON and turn BRIGHT VR to MAX, allow to run for at least 30 minutes, then return the switch to OFF and BRIGHT VR to back.
- Set the screen VR to the original position.

1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedge.
4. Input a Green Raster signal from the Signal Generator, and turn the screen to Green Raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig. 3)
7. Adjust the gap between two lugs so that the Green Raster will come into the center of the screen. (Fig. 4)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and Blue Raster signals, and make sure that purity is properly adjusted.

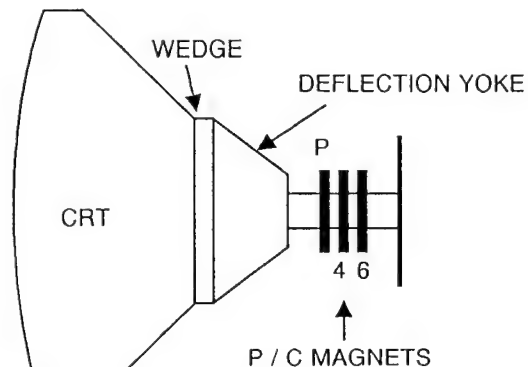


Fig. 1

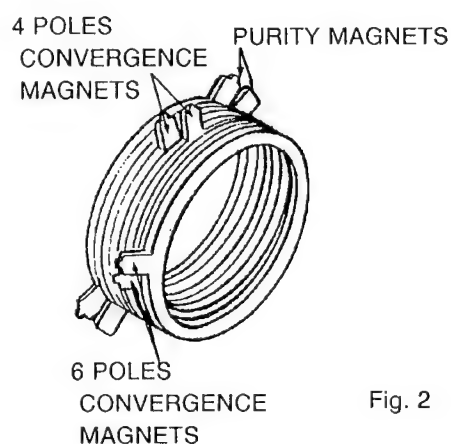


Fig. 2

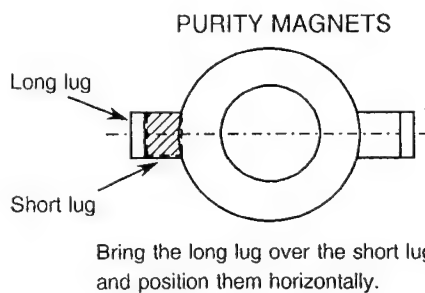


Fig. 3

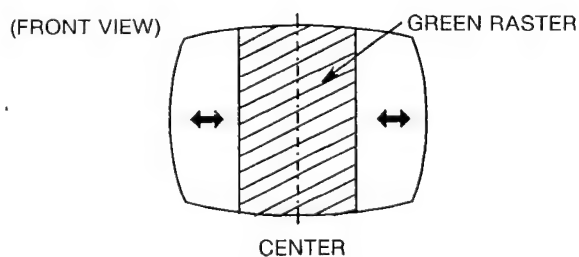


Fig. 4

## STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta (red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

## DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

- After adjustment, fix the wedge at the original position.  
Fasten the retainer screw of the deflection yoke.  
Fix the 6 magnets with glue.

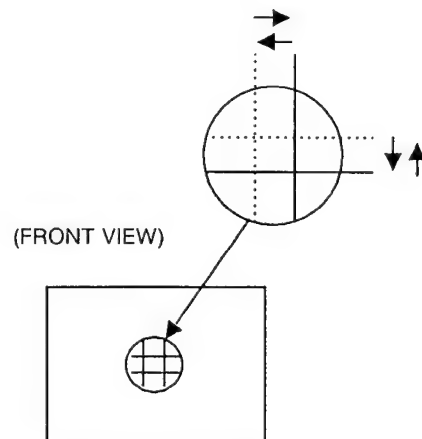


Fig. 1

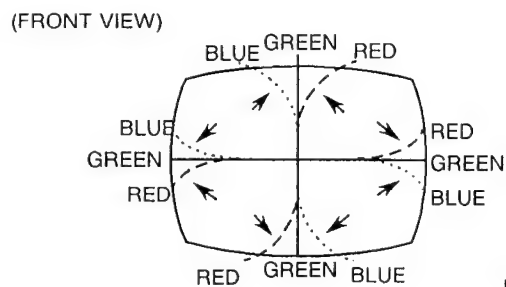


Fig. 2

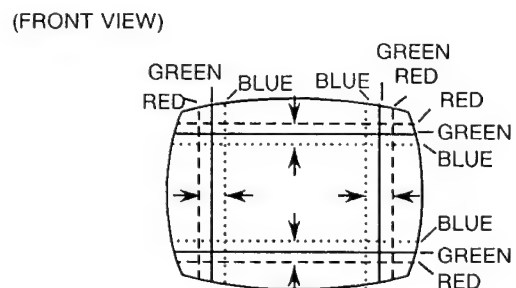



Fig. 3

# Schematic Diagram for Model BT-S1050Y/YG

## ■NOTE ON USING CIRCUIT DIAGRAMS

### 1.SAFETY

The components identified by the  symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

### 2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1)Input signal :Colour bar signal
  - (2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
  - (3)Internal resistance of tester :DC 20kΩ/V
  - (4)Oscilloscope sweeping time :H ⇒20μS/div  
:V ⇒5mS/div  
:Others ⇒ Sweeping time is specified
  - (5)Voltage values :All DC voltage values
- \* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

### 3.INDICATION OF PARTS SYMBOL[EXAMPLE]

- In the PW board :R1209→R209

### 4.INDICATIONS ON THE CIRCUIT DIAGRAM

#### (1)Resistors

- Resistance value

|         |        |
|---------|--------|
| No unit | : [Ω]  |
| K       | : [KΩ] |
| M       | : [MΩ] |

- Rated allowable power

|               |                |
|---------------|----------------|
| No indication | : 1/6[W]       |
| Others        | : As specified |

- Type

|               |                             |
|---------------|-----------------------------|
| No indication | : Carbon resistor           |
| OMR           | : Oxide metal film resistor |
| MFR           | : Metal film resistor       |
| MPR           | : Metal plate resistor      |
| UNFR          | : Uninflamable resistor     |
| FR            | : Fusible resistor          |

\* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

#### (2)Capacitors

- Capacitance value

|             |        |
|-------------|--------|
| 1 or higher | : [pF] |
| less than 1 | : [μF] |

- Withstand voltage

|               |                           |
|---------------|---------------------------|
| No indication | : DC50[V]                 |
| Others        | : DC withstand voltage[V] |
| AC indicated  | : AC withstand voltage[V] |

- \* Electrolytic Capacitors

47/50[Example]: Capacitance value[μF]/withstand voltage[V]




- Type

|               |                                     |
|---------------|-------------------------------------|
| No indication | : Ceramic capacitor                 |
| MY            | : Mylar capacitor                   |
| MM            | : Metalized mylar capacitor         |
| PP            | : Polypropylene capacitor           |
| MPP           | : Metalized polypropylene capacitor |
| MF            | : Metalized film capacitor          |
| TF            | : Thin film capacitor               |
| BP            | : Bipolar electrolytic capacitor    |
| TAN           | : Tantalum capacitor                |

#### (3)Coils



|         |                |
|---------|----------------|
| No unit | : [μH]         |
| Others  | : As specified |

#### (4)Power Supply




|  |           |
|--|-----------|
|  | : B1      |
|  | : B2(12V) |
|  | : 5V      |

\* Respective voltage values are indicated.





#### (5)Test Point

|   |                           |
|---|---------------------------|
|  | : Test point              |
|  | : Only test point display |



#### (6)Connecting method

|   |                         |
|---|-------------------------|
|   | : Connector             |
|  | : Wrapping or soldering |
|  | : Receptacle            |

#### (7)Ground symbol

|   |                                 |
|---|---------------------------------|
|  | : LIVE side ground              |
|  | : ISOLATED(NEUTRAL) side ground |
|  | : EARTH ground                  |
|  | : DIGITAL ground                |

### 5.NOTE FOR REPAIRING SERVICE

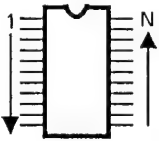
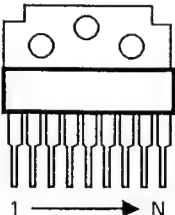
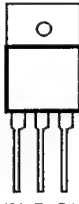
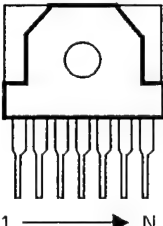
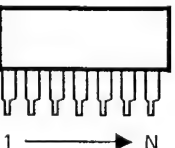
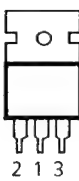
This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : () side GND and the ISOLATED(NEUTRAL) : () side GND. Therefore, care must be taken for the following points.

- (1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
- (2) Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.


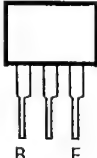
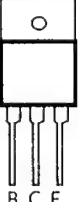
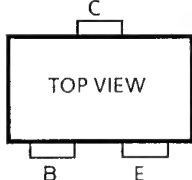
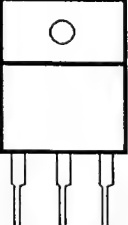
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

## SEMICONDUCTOR SHAPES

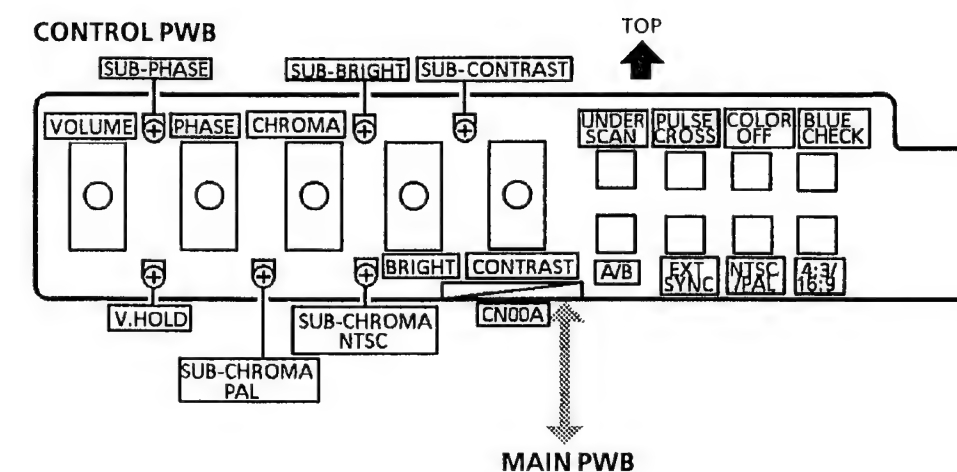
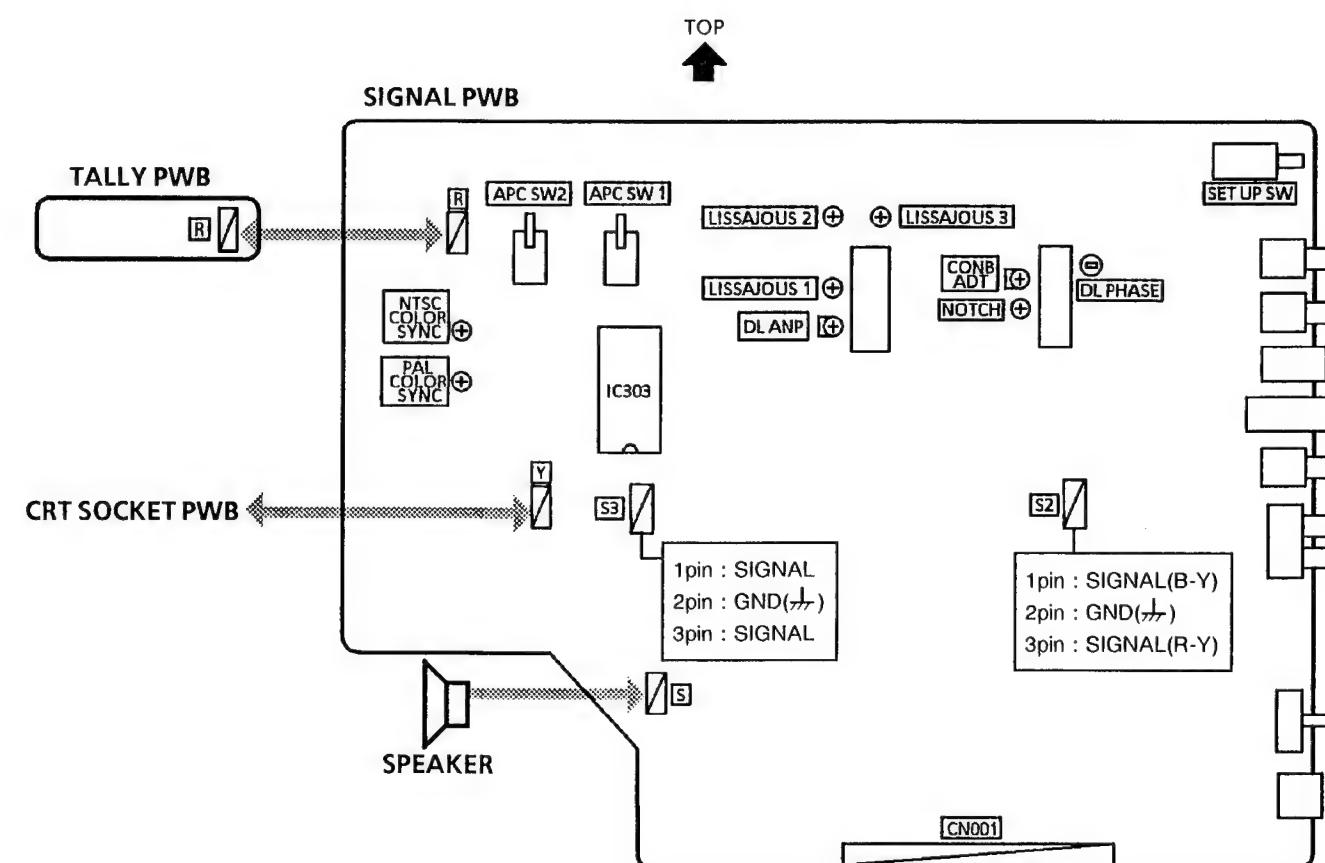
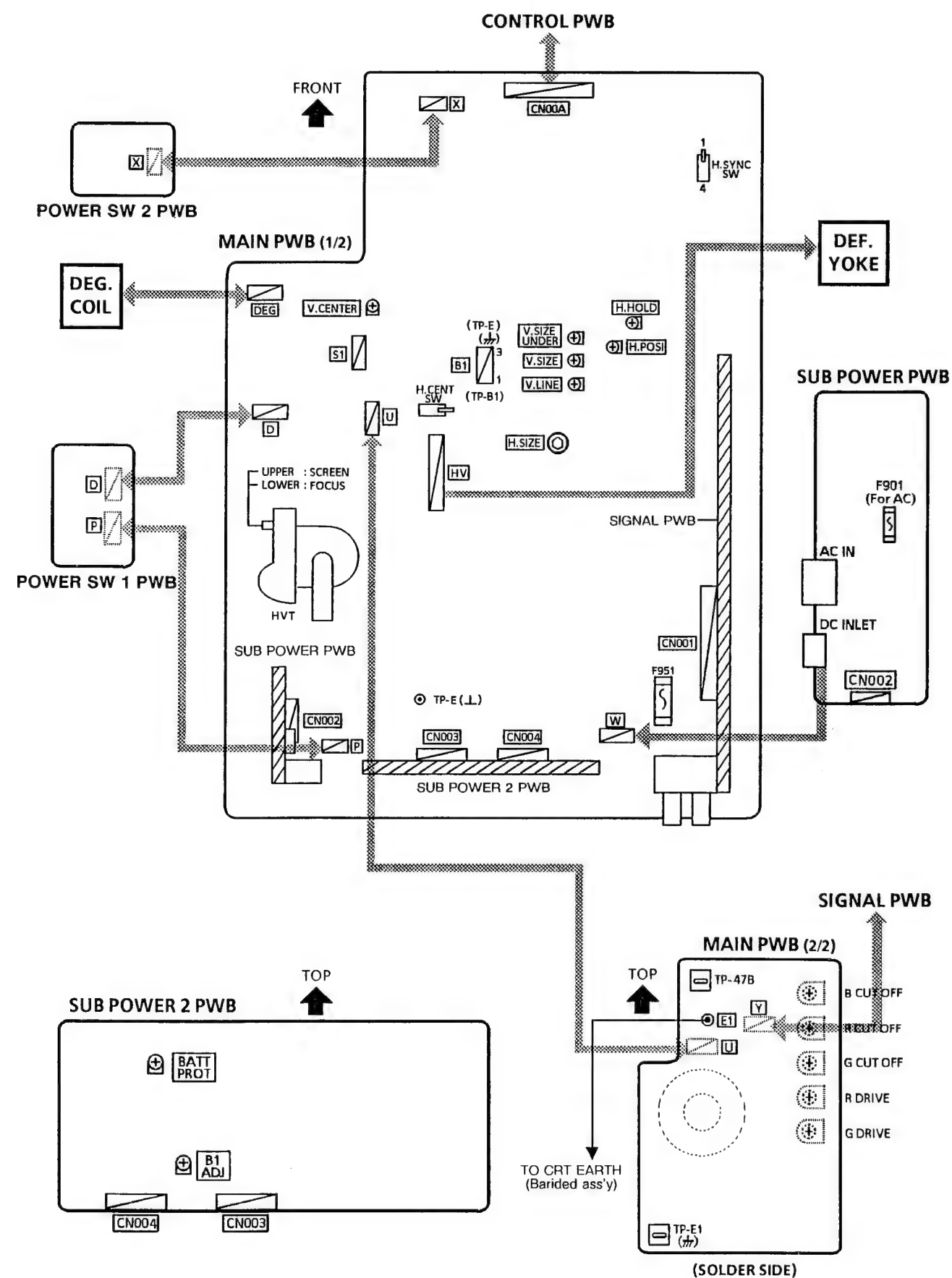
## ICs

|  |   |  |
|--|---|--|
|  <p>AN5265<br/>AN5613<br/>HA11423<br/>TC4538BF<br/>TC4052BP<br/>TC4066BF<br/>UPC4558C</p> |  <p>AN5265</p>                       |  <p>AN7812F</p>               |
|  <p>LA7830</p>  |  <p>LA7016<br/>AN5900<br/>AN8026</p> |  <p>S1854-C1<br/>TA7012AP</p> |

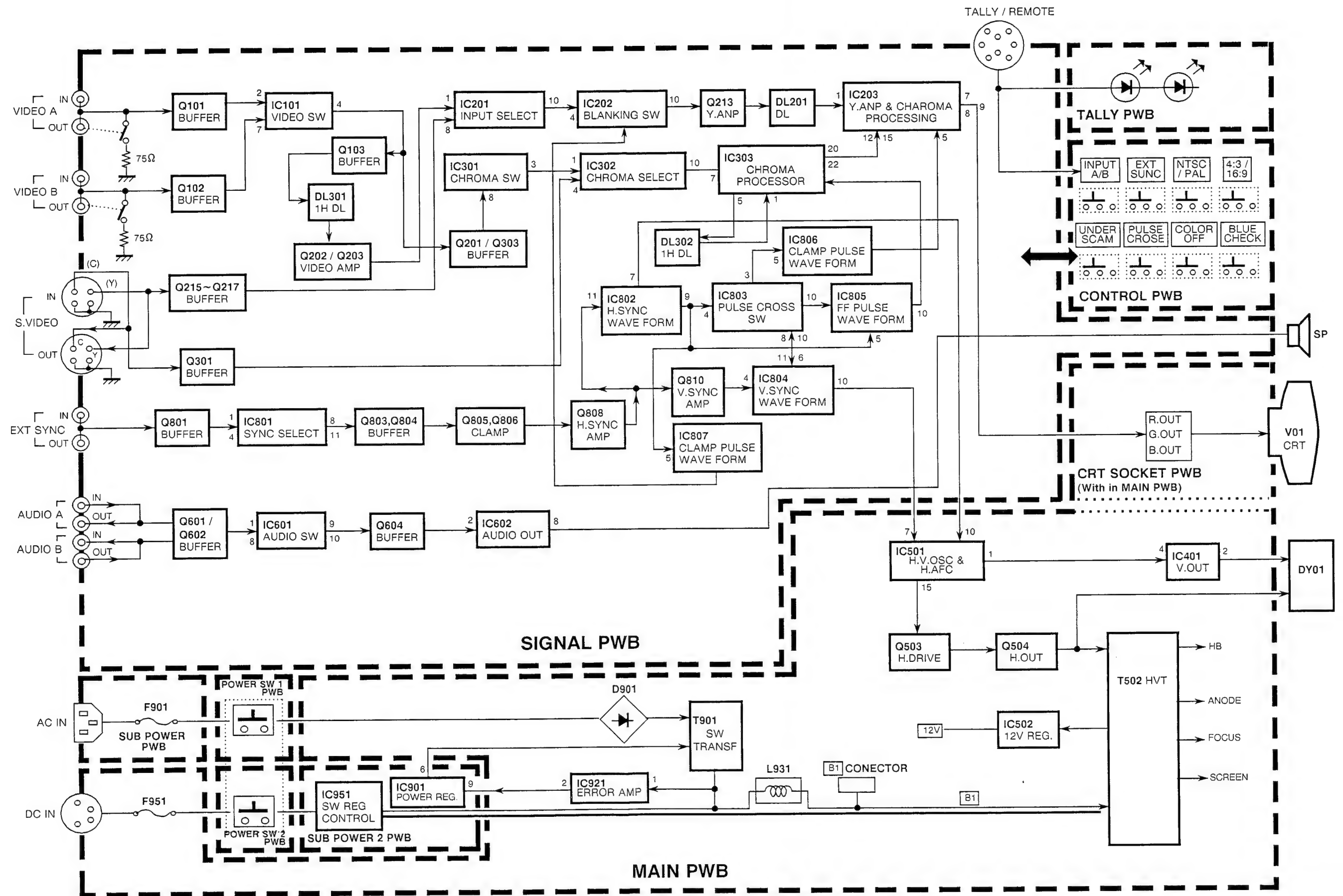
## TRANSISTORS

|  |   |   |
|--|---|---|
| <p>Bottom View</p>  <p>2SA1015(YG)-T<br/>2SA1309<br/>2SA1370(E)<br/>2SA562TM<br/>2SC1472K<br/>2SC1815(YG)-T<br/>2SC1959(Y)<br/>2SC2655(Y)-T<br/>2SC3187-T</p> |  <p>2SC1309A(QR)<br/>2SC3311A(QR)<br/>DTC124ES-T<br/>DTC124ESA-T</p> |  <p>2SC2750(L)</p> |
| <p>(Chip Transistor)</p>  <p>2SA1037K(QR)<br/>2SC2412K(QR)<br/>DTC144EKA</p>  |  <p>IRFIBC40G<br/>IRF620<br/>2SD1878-YD</p>                          |   |

## MAIN PARTS LOCATION AND ALIGNMENTS LOCATION



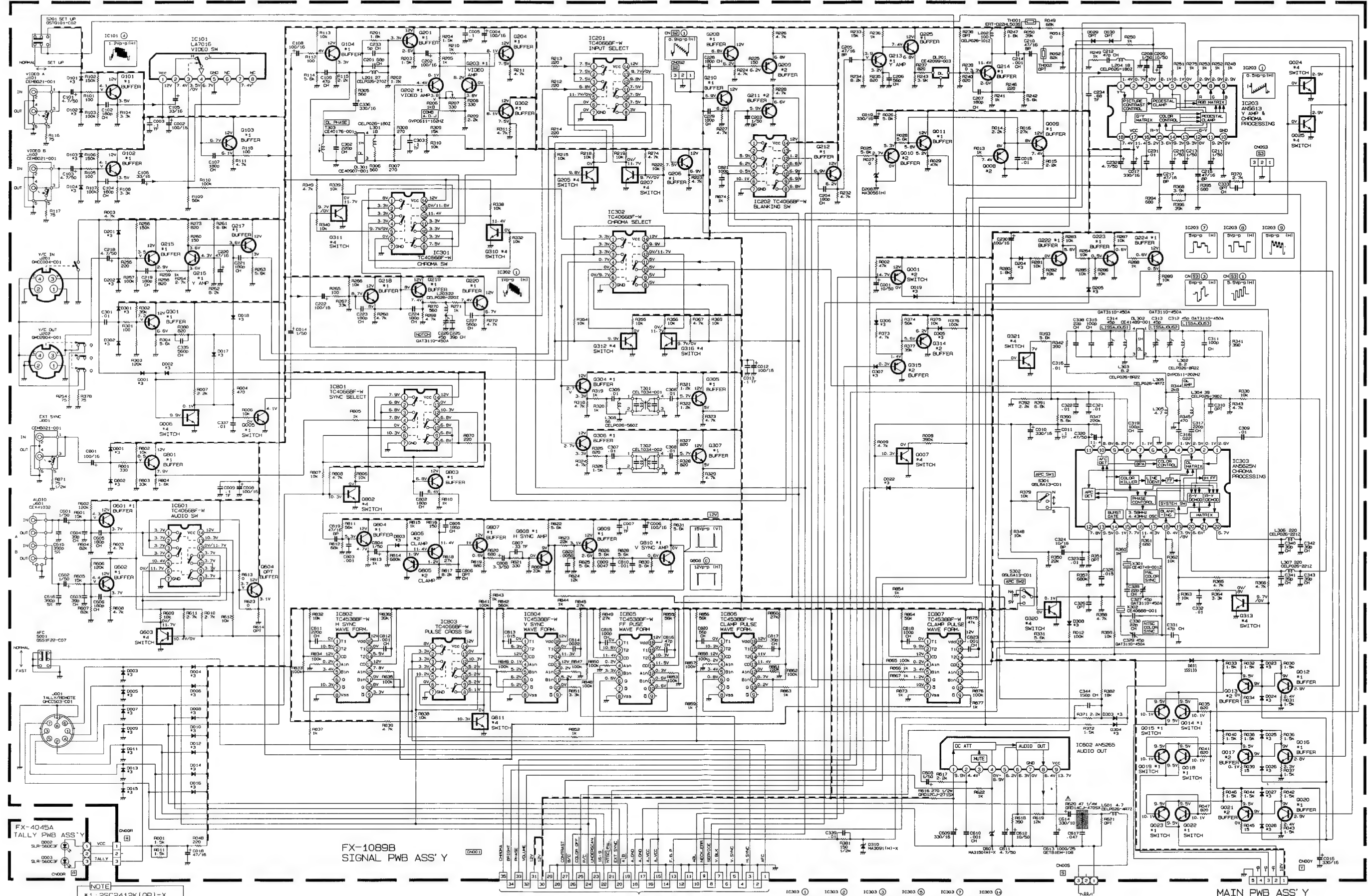
## BLOCK DIAGRAM



## CIRCUIT DIAGRAMS AND PWB PATTERNS

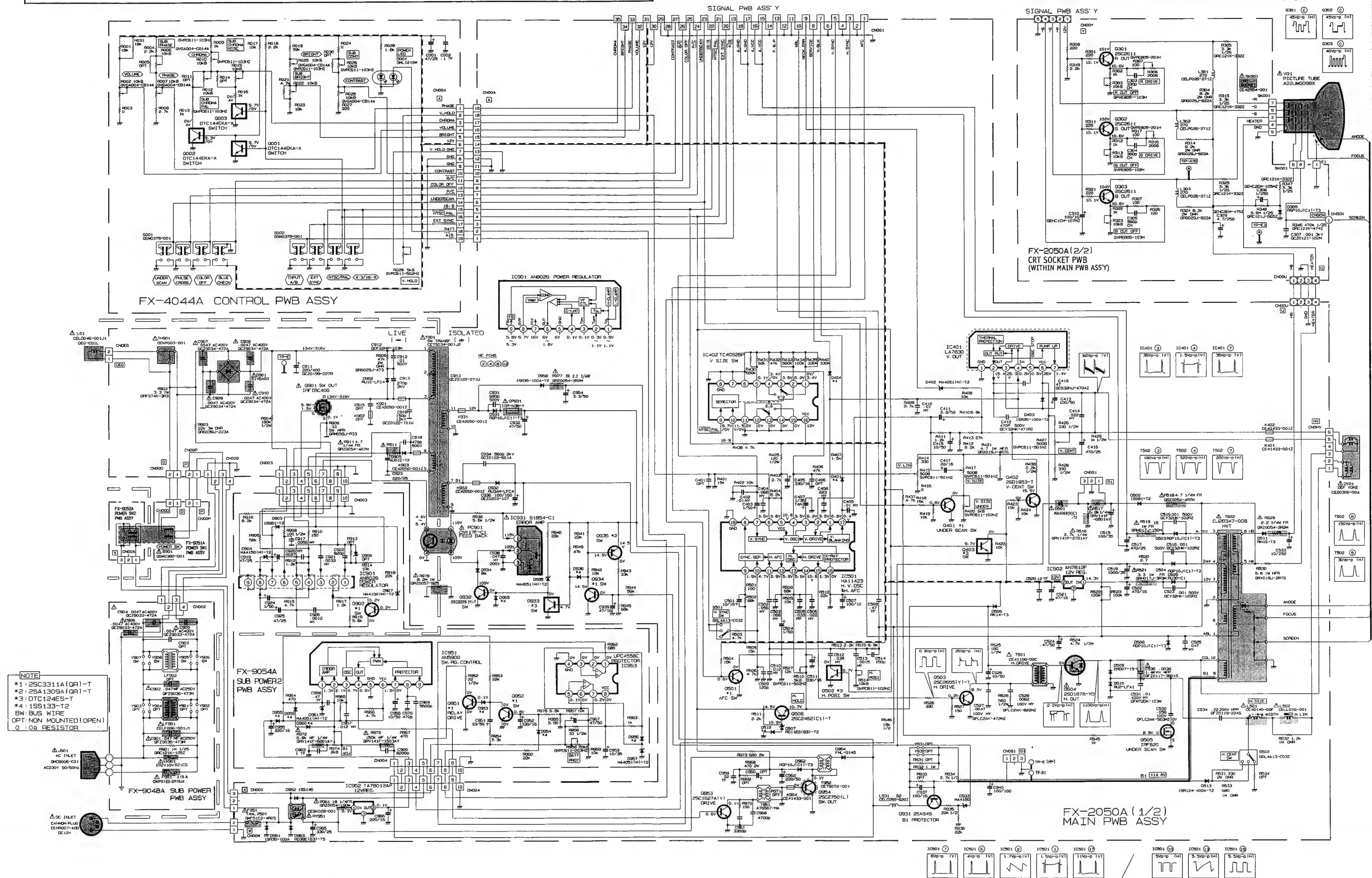
## SIGNAL PWB, TALLY PWB CIRCUIT DIAGRAM

Refer to the following PWB pattern: SIGNAL PWB PATTERN 31, 32 page.  
TALLY PWB 35 page.



MAIN PWB (1/2), CRT SOCKET PWB(2/2), CONTROL PWB, SUB POWER PWB, SUB POWER2 PWB,  
POWER SW1 PWB, POWER SW2 PWB, CIRCUIT DIAGRAMS

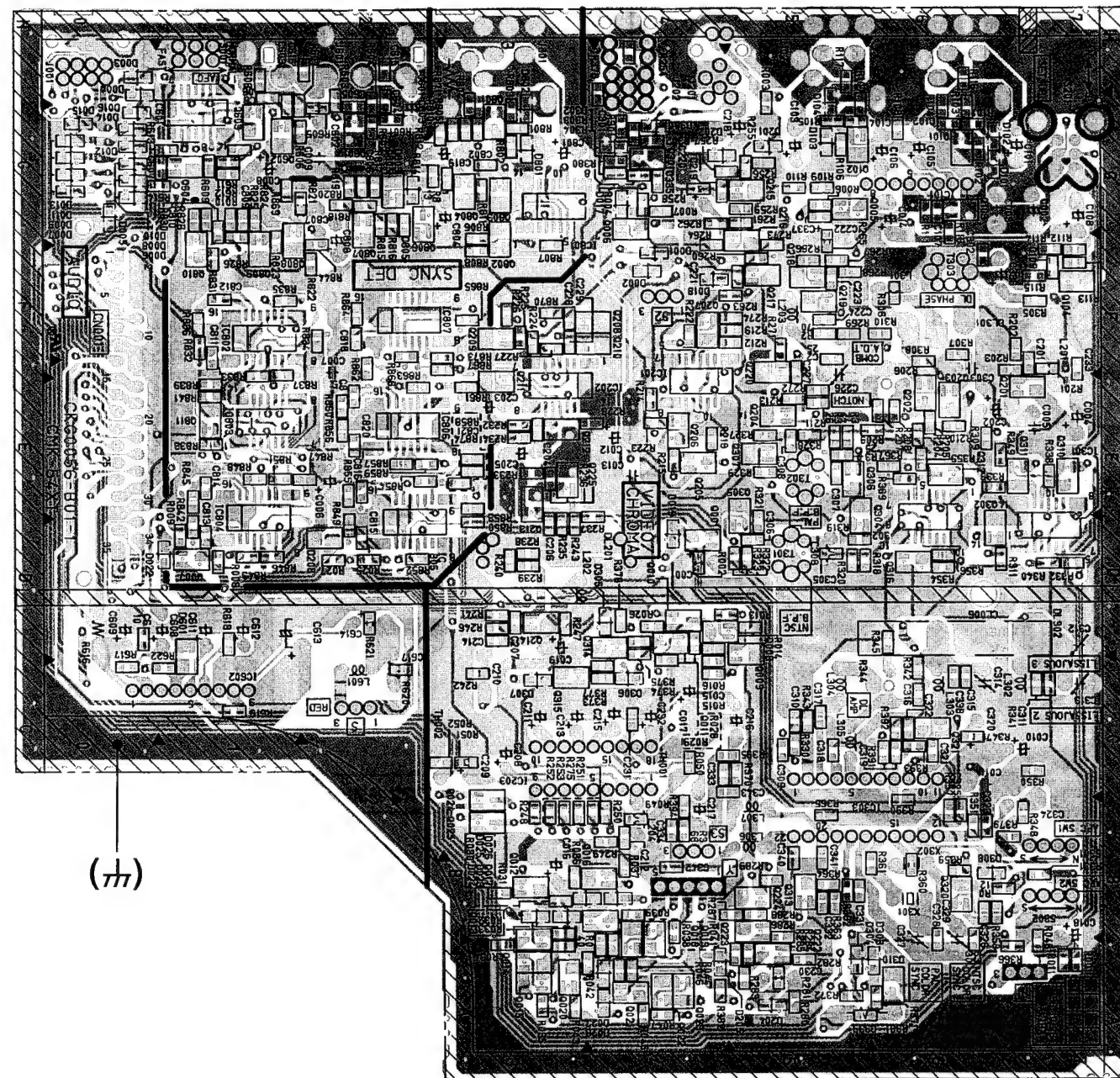
Refer to the following PWB pattern: MAIN PWB PATTERN (1/2) page 33, 34. CONTROL PWB PATTERN page 36.  
CRT SOCKET PWB PATTERN (2/2) page 35.  
SUB POWER PWB PATTERN, SUB POWER 2 PWB PATTERN page 34.  
POWER SW1 PWB PATTERN, POWER SW2 PWB PATTERN page 35.



SIGNAL PWB PATTERN (SOLDER SIDE)

[FX-1089B]

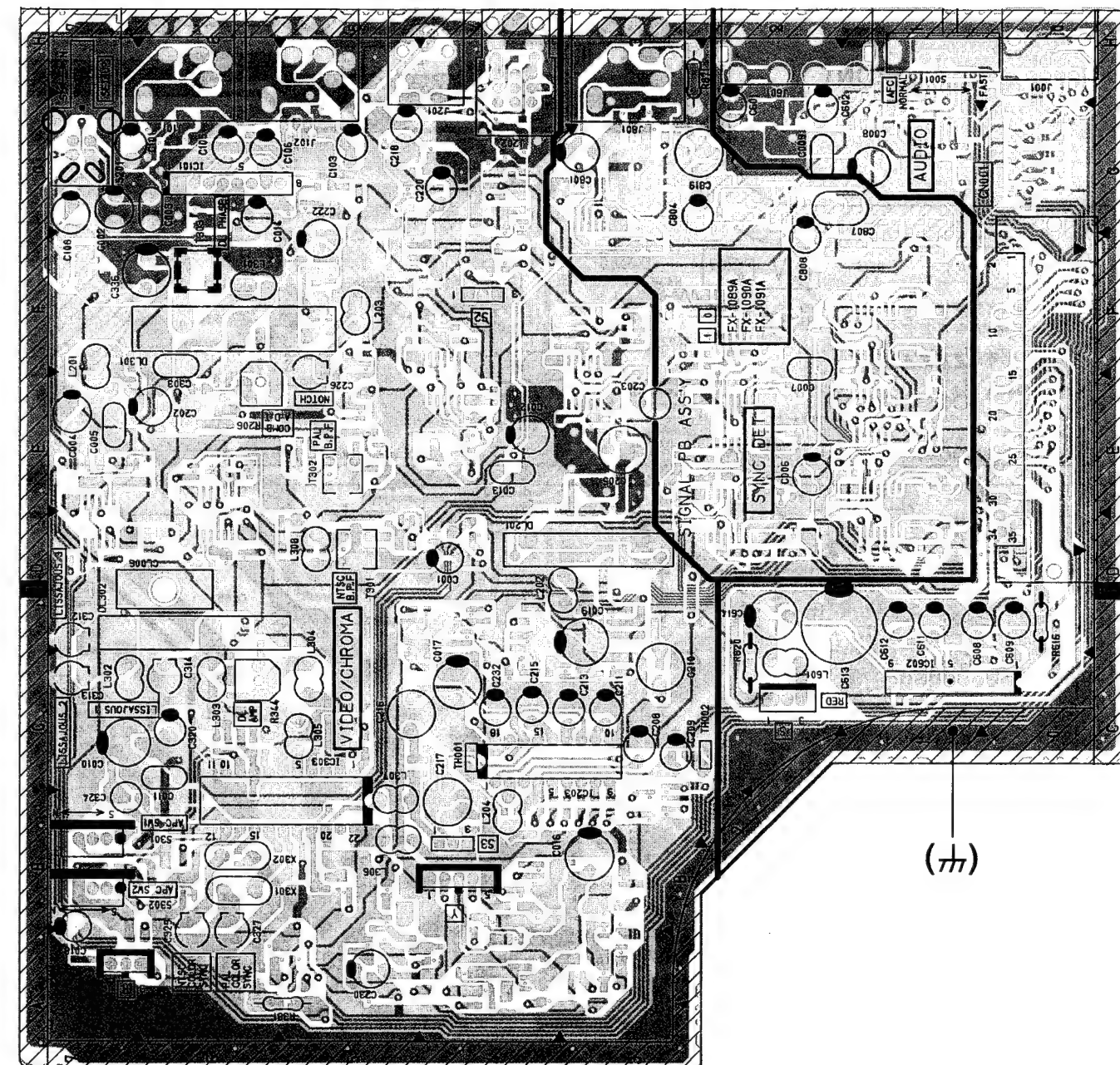
(Magnification Rate 89%)



SIGNAL PWB PATTERN (PARTS SIDE)

[FX-1089B]

(Magnification Rate 89%)



## MAIN PWB PATTERN

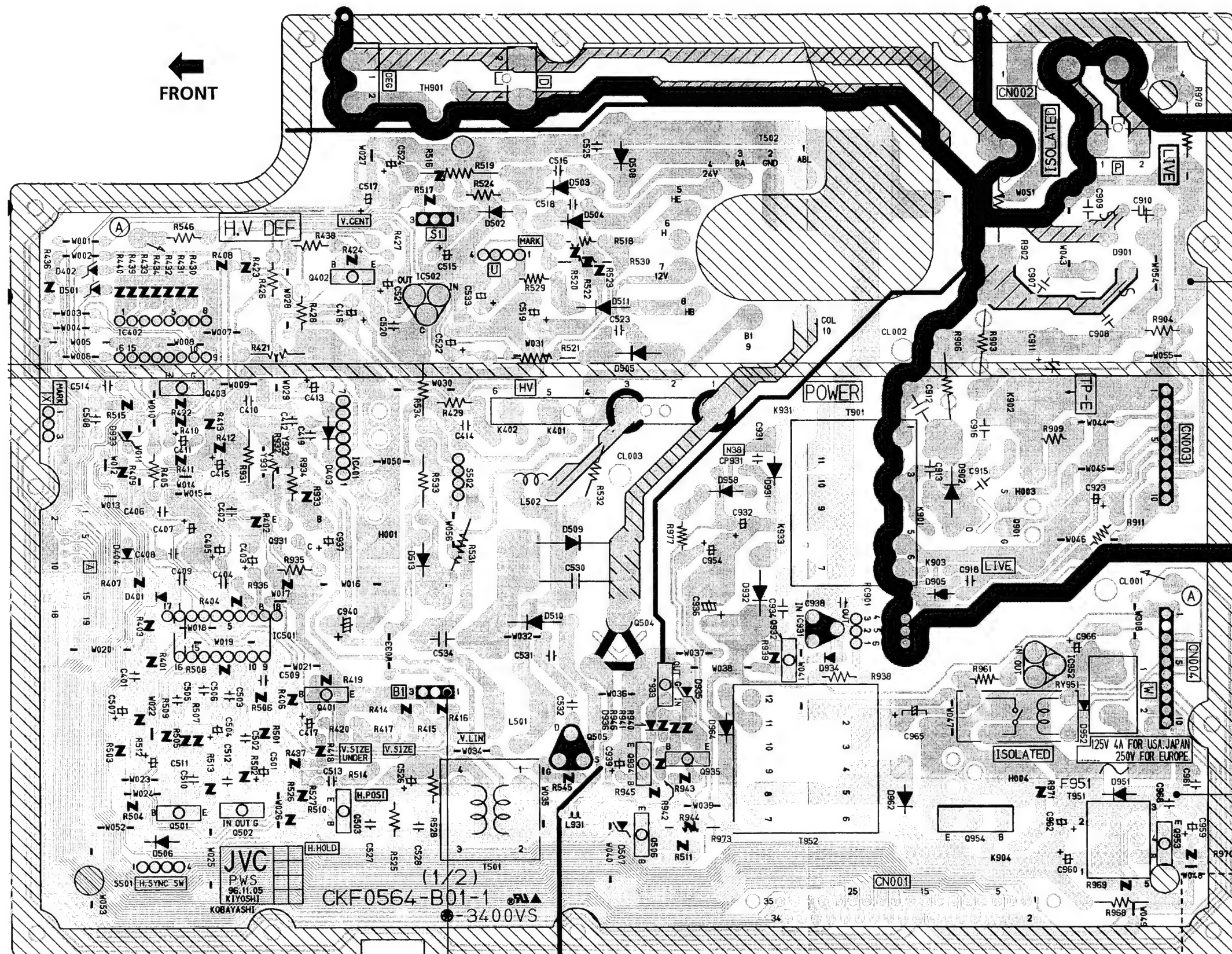
[FX-2050A]

(Magnification Rate 110%)

## SUB POWER PWB PATTERN

[FX-9048A]

(Magnification Rate 75%)

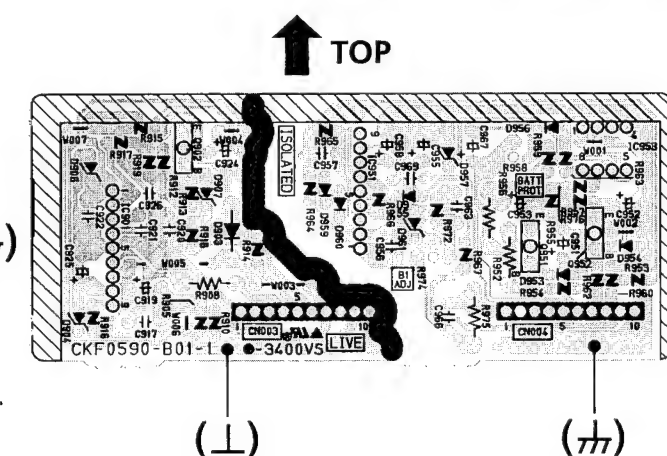


(T)

## SUB POWER2 PWB PATTERN

[FX-9054A]

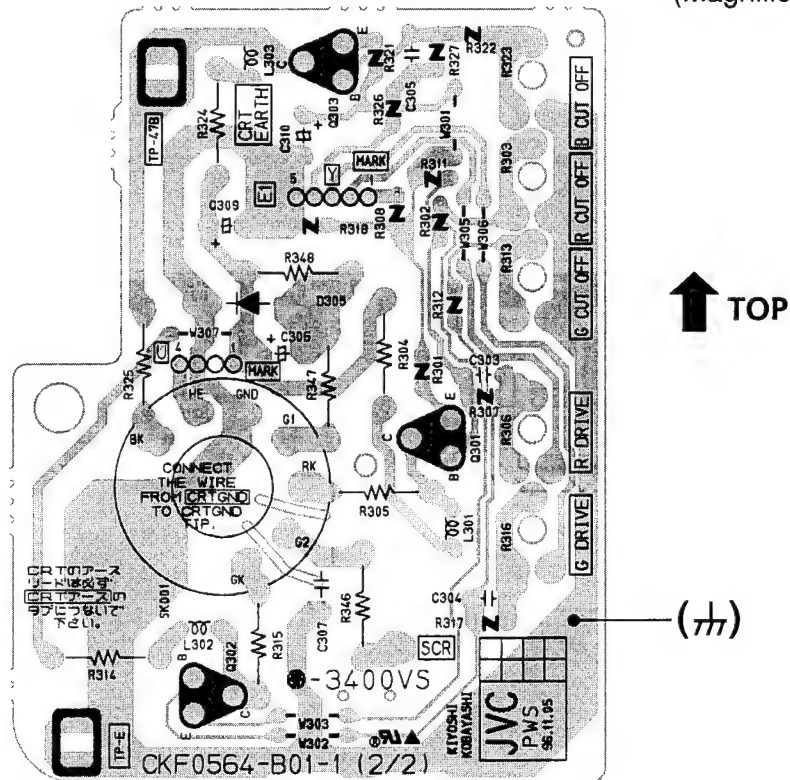
(Magnification Rate 75%)



CRT SOCKET PWB PATTERN (With in MAIN PWB)

[FX-2050A]

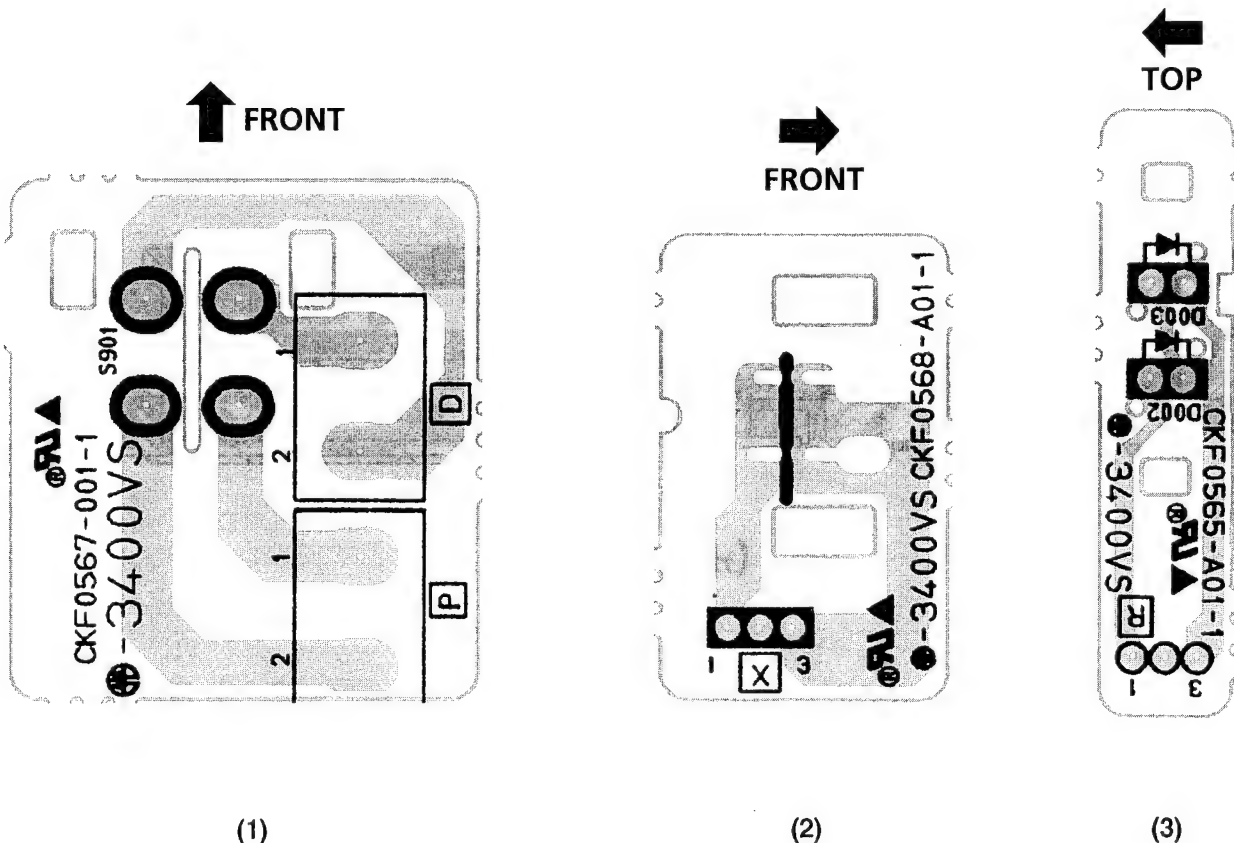
(Magnification Rate 95%)



POWER SW1 PWB PATTERN (1)  
POWER SW2 PWB PATTERN (2)  
TALLY PWB PATTERN (3)

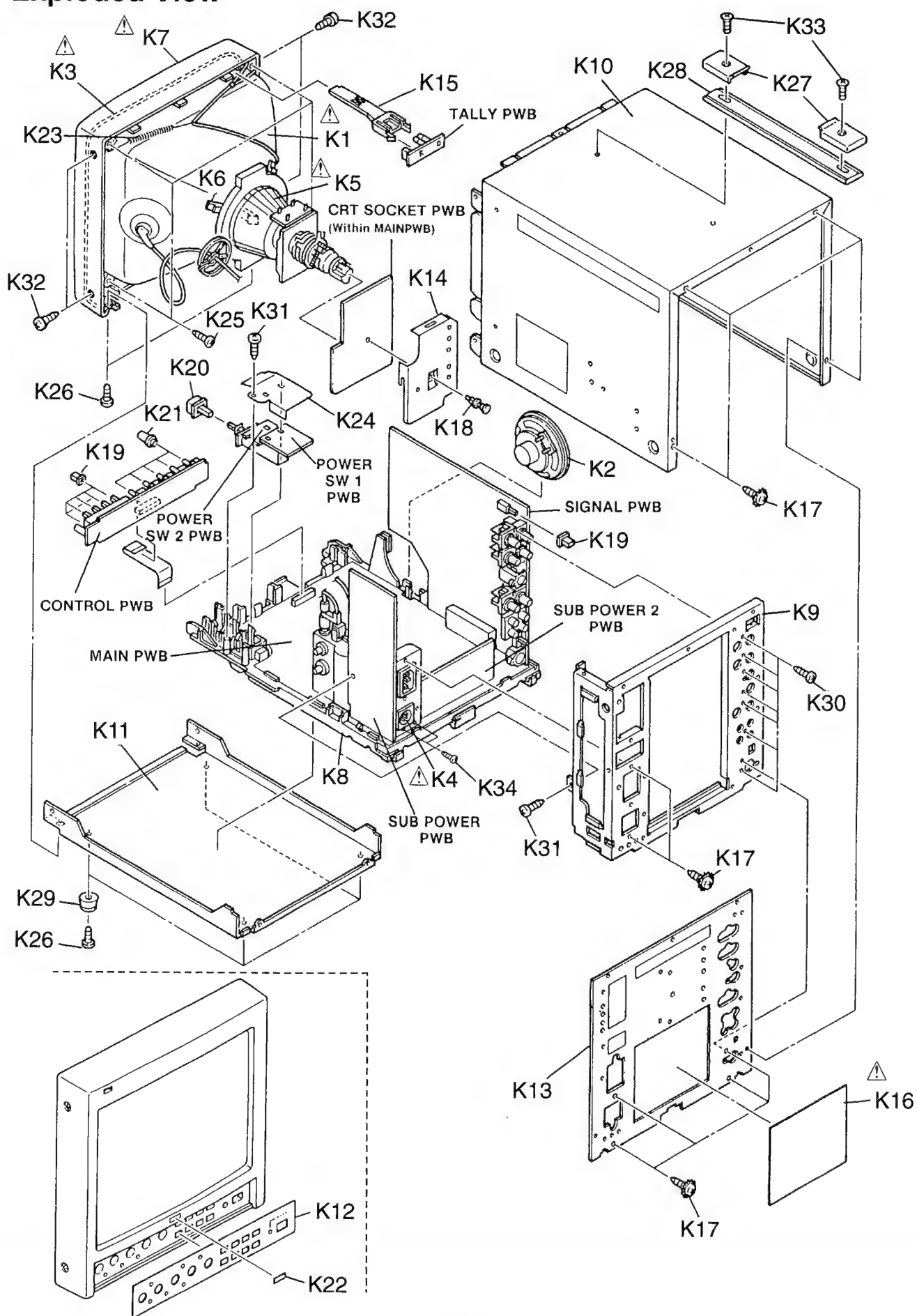
[FX-9051A]  
[FX-9052A]  
[FX-4045A]

(Magnification Rate 170%)





# Exploded View



## 7-2. REPLACEMENT PARTS LIST

## Important Safety Notice

Components identified by the International symbol  $\triangle$  have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.

## Abbreviation of Part Name and Description

## 1. Resistor

Example:

**C 100KOHM, J, 1/4W**

TYPE ALLOWANCE

| TYPE            | ALLOWANCE      |
|-----------------|----------------|
| C : Carbon      | F : $\pm 1\%$  |
| F : Fuse        | G : $\pm 2\%$  |
| M : Metal Oxide | J : $\pm 5\%$  |
| Metal Film      | K : $\pm 10\%$ |
| S : Solid       | M : $\pm 20\%$ |
| W : Wire Wound  |                |

## 2. Capacitor

Example:

**C 0.01PF, Z, 50V**

TYPE ALLOWANCE

| TYPE               | ALLOWANCE               |
|--------------------|-------------------------|
| C : Ceramic        | C : $\pm 0.25\text{pF}$ |
| E : Electrolytic   | D : $\pm 0.5\text{pF}$  |
| P : Polyester      | F : $\pm 1\text{pF}$    |
| PP : Polypropylene | J : $\pm 5\%$           |
| S : Styrol         | K : $\pm 10\%$          |
| T : Tantalum       | L : $\pm 15\%$          |
|                    | M : $\pm 20\%$          |
|                    | P : $+100\%, -0\%$      |
|                    | Z : $+80\%, -20\%$      |

**Note:** For G  $\bigcirc$   $\bigcirc$  of Ref. No., notr indicate illustration of it part on "Exploded Views".

Printed circuit board assembly with mark (RTL) is no longer available after production discontinuation of the complete set.

| Ref. No.         | Part No.     | Description             | Ref. No.            | Part No.     | Description                 |
|------------------|--------------|-------------------------|---------------------|--------------|-----------------------------|
| MECHANICAL PARTS |              |                         |                     |              |                             |
| $\triangle$ K1   | A22JWG098X   | PICTURE TUBE (V01)      | K25                 | GBSF4016M    | SCREW                       |
| K2               | CEBSS08P01KJ | SPEAKER                 | K26                 | GBSG3008Z    | SCREW                       |
| $\triangle$ K3   | CELD046001J1 | DEGAUSS COIL (L01)      | K27                 | PRD43812     | HANDLE COVER                |
| $\triangle$ K4   | CEMR007-B0B  | DC INLET                | K28                 | PU46361-2    | HANDEL                      |
| $\triangle$ K5   | CE20300-00A  | DEFLECTION YOKE (DY01)  | G8                  | QMP4908-200K | POWER CORD (for BT-S1050Y)  |
| K6               | CE40666-00A  | DY WEDGE                | G8                  | QMPP010-200K | POWER CORD (for BT-S1050YG) |
| K7               | CM12867A02V0 | ESCUTCHEON              | G9                  | QPGA01203005 | BAG                         |
| K8               | CM12868A01V0 | CHASSIS BASE            | K29                 | QZF2207-001  | FOOT                        |
| K9               | CM12869-001  | TERMINAL BRACKET        | K30                 | SBSB3010M    | SCREW                       |
| K10              | CM12879-00C  | TOP COVER               | K31                 | SBSF4012Z    | SCREW                       |
| K11              | CM22942-C01  | BOTTOM COVER            | K32                 | SDSF3006M    | SCREW                       |
| K12              | CM23089-B02  | CONTROL SHEET           | K33                 | SHSP4014R    | SCREW                       |
| K13              | CM23130-00B  | REAR COVER              | K34                 | SPST2606N    | SCREW                       |
| K14              | CM36519-001  | GUARD SHEET             | G10                 | XZBT6506     | POLY BAG                    |
| K15              | CM36546-A01  | TALLY PLATE             | INTEGRATED CIRCUITS |              |                             |
| $\triangle$ K16  | CM36586-A01R | LABEL (for BT-S1050Y)   | IC1101              | LA7016       | LINEAR IC                   |
| $\triangle$ K16  | CM36586-A02R | LABEL (for BT-S1050YG)  | IC1201              | TC4066BF     | IC                          |
| K17              | CM44287-00C  | SCREW                   | IC1202              | TC4066BF     | IC                          |
| K18              | CM45627-00A  | RIVET                   | IC1203              | AN5613       | LINEAR IC                   |
| K19              | CM46044-002  | PUSH KNOB               | IC1301              | TC4066BF     | IC                          |
| K20              | CM46115-003  | POWER KNOB              | IC1302              | TC4066BF     | IC                          |
| G1               | CM46942-A01  | LED HOLDER              | IC1303              | AN5625N      | LINEAR IC                   |
| K21              | CM47853-006  | VOLUME KNOB             | IC1601              | TC4066BF     | IC                          |
| G2               | CM48038-001  | LED HOLDER              | IC1602              | AN5265       | LINEAR IC                   |
| K22              | CM48151-010  | PANASONIC BADGE         | IC1801              | TC4066BF     | IC                          |
| K23              | CM48174-001  | SPRING                  | IC1802              | TC4538BF     | IC                          |
| K24              | CM48246-001  | SWITCH SHEET            | IC1803              | TC4066BF     | IC                          |
| G3               | CP11224-047  | CARTON (for BT-S1050Y)  | IC1804              | TC4538BF     | IC                          |
| G3               | CP11224-048  | CARTON (for BT-S1050YG) | IC1805              | TC4538BF     | IC                          |
| G4               | CP11460-B0A  | CUSHION                 | IC1806              | TC4538BF     | IC                          |
| G5               | CP30974-003  | BAG                     | IC1807              | TC4538BF     | IC                          |
| G6               | CP40339-001  | CUSHION                 | IC2401              | LA7830       | IC                          |
| G7               | CQ40377-001  | INSTRUCTION BOOK        | IC2402              | TC4052BP     | MOS IC (CMOS LOGIC)         |

|             | Ref. No. | Part No.     | Description |        | Ref. No. | Part No.     | Description |
|-------------|----------|--------------|-------------|--------|----------|--------------|-------------|
| △           | IC2501   | HA11423      | LINEAR IC   |        | Q1311    | DTC144EKA-X  | TRANSISTOR  |
|             | IC2502   | AN7812F      | LINEAR IC   |        | Q1312    | DTC144EKA-X  | TRANSISTOR  |
|             | IC2931   | S1854        | LINEAR IC   |        | Q1313    | DTC144EKA-X  | TRANSISTOR  |
|             | IC2952   | TA78012AP    | IC          |        | Q1314    | 2SA1037K(QR) | TRANSISTOR  |
|             | IC9901   | AN8026       | LINEAR IC   |        | Q1315    | 2SA1037K(QR) | TRANSISTOR  |
|             | IC9951   | AN5900       | LINEAR IC   |        | Q1316    | DTC144EKA-X  | TRANSISTOR  |
|             | IC9953   | UPC4558C     | LINEAR IC   |        | Q1320    | DTC144EKA-X  | TRANSISTOR  |
| TRANSISTORS |          |              |             |        | Q1321    | DTC144EKA-X  | TRANSISTOR  |
|             | Q1001    | 2SA1037K(QR) | TRANSISTOR  |        | Q1601    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1005    | 2SC2412K(QR) | TRANSISTOR  |        | Q1602    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1006    | DTC144EKA-X  | TRANSISTOR  |        | Q1603    | DTC144EKA-X  | TRANSISTOR  |
|             | Q1007    | DTC144EKA-X  | TRANSISTOR  |        | Q1801    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1008    | 2SA1037K(QR) | TRANSISTOR  |        | Q1802    | DTC144EKA-X  | TRANSISTOR  |
|             | Q1009    | 2SC2412K(QR) | TRANSISTOR  |        | Q1803    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1010    | 2SA1037K(QR) | TRANSISTOR  |        | Q1804    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1011    | 2SC2412K(QR) | TRANSISTOR  |        | Q1805    | 2SA1037K(QR) | TRANSISTOR  |
|             | Q1012    | 2SC2412K(QR) | TRANSISTOR  |        | Q1807    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1013    | 2SA1037K(QR) | TRANSISTOR  |        | Q1808    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1014    | 2SC2412K(QR) | TRANSISTOR  |        | Q1809    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1015    | 2SC2412K(QR) | TRANSISTOR  |        | Q1810    | 2SC2412K(QR) | TRANSISTOR  |
|             | Q1016    | 2SC2412K(QR) | TRANSISTOR  |        | Q1811    | DTC144EKA-X  | TRANSISTOR  |
|             | Q1017    | 2SA1037K(QR) | TRANSISTOR  |        | Q2301    | 2SC2611      | TRANSISTOR  |
|             | Q1018    | 2SC2412K(QR) | TRANSISTOR  |        | Q2302    | 2SC2611      | TRANSISTOR  |
|             | Q1019    | 2SC2412K(QR) | TRANSISTOR  |        | Q2303    | 2SC2611      | TRANSISTOR  |
|             | Q1020    | 2SC2412K(QR) | TRANSISTOR  |        | Q2401    | 2SC3311A     | TRANSISTOR  |
|             | Q1021    | 2SA1037K(QR) | TRANSISTOR  |        | Q2402    | 2SD1853-T    | TRANSISTOR  |
|             | Q1022    | 2SC2412K(QR) | TRANSISTOR  |        | Q2403    | DTC124ES     | TRANSISTOR  |
|             | Q1023    | 2SC2412K(QR) | TRANSISTOR  | △      | Q2501    | 2SC3311A     | TRANSISTOR  |
|             | Q1024    | DTC144EKA-X  | TRANSISTOR  |        | Q2502    | DTC124ES     | TRANSISTOR  |
|             | Q1025    | DTC144EKA-X  | TRANSISTOR  | △      | Q2503    | 2SC2655      | TRANSISTOR  |
|             | Q1086    | 2SA1037K(QR) | TRANSISTOR  |        | Q2504    | 2SD1878-YD   | TRANSISTOR  |
|             | Q1101    | 2SC2412K(QR) | TRANSISTOR  |        | Q2505    | IRF620       | FET         |
|             | Q1102    | 2SC2412K(QR) | TRANSISTOR  |        | Q2506    | 2SC2482(C1)  | TRANSISTOR  |
|             | Q1103    | 2SC2412K(QR) | TRANSISTOR  |        | Q2901    | IRFIB40G     | FET         |
|             | Q1104    | 2SC2412K(QR) | TRANSISTOR  |        | Q2931    | 2SA949(Y)C1  | TRANSISTOR  |
|             | Q1201    | 2SC2412K(QR) | TRANSISTOR  |        | Q2932    | 2SC2229      | TRANSISTOR  |
|             | Q1202    | 2SC2412K(QR) | TRANSISTOR  |        | Q2933    | DTC124ES     | TRANSISTOR  |
|             | Q1203    | 2SC2412K(QR) | TRANSISTOR  |        | Q2934    | 2SC3311A     | TRANSISTOR  |
|             | Q1204    | 2SC2412K(QR) | TRANSISTOR  |        | Q2935    | 2SA1309A     | TRANSISTOR  |
|             | Q1205    | DTC144EKA-X  | TRANSISTOR  |        | Q2953    | 2SC1627AY    | TRANSISTOR  |
|             | Q1206    | 2SC2412K(QR) | TRANSISTOR  |        | Q2954    | 2SC2750L     | TRANSISTOR  |
|             | Q1207    | DTC144EKA-X  | TRANSISTOR  |        | Q4001    | DTC144EKA-X  | TRANSISTOR  |
|             | Q1208    | 2SC2412K(QR) | TRANSISTOR  |        | Q4002    | DTC144EKA-X  | TRANSISTOR  |
|             | Q1209    | 2SA1037K(QR) | TRANSISTOR  |        | Q4003    | DTC144EKA-X  | TRANSISTOR  |
|             | Q1210    | 2SC2412K(QR) | TRANSISTOR  |        | Q9902    | 2SC3311A     | TRANSISTOR  |
|             | Q1211    | 2SA1037K(QR) | TRANSISTOR  |        | Q9951    | 2SC3311A     | TRANSISTOR  |
|             | Q1212    | 2SC2412K(QR) | TRANSISTOR  |        | Q9952    | 2SC3311A     | TRANSISTOR  |
|             | Q1213    | 2SC2412K(QR) | TRANSISTOR  | DIODES |          |              |             |
|             | Q1214    | 2SC2412K(QR) | TRANSISTOR  |        | D1001    | 1SS353       | DIODE       |
|             | Q1215    | 2SC2412K(QR) | TRANSISTOR  |        | D1002    | 1SS353       | DIODE       |
|             | Q1216    | 2SC2412K(QR) | TRANSISTOR  |        | D1003    | 1SS353       | DIODE       |
|             | Q1217    | 2SC2412K(QR) | TRANSISTOR  |        | D1004    | 1SS353       | DIODE       |
|             | Q1218    | 2SC2412K(QR) | TRANSISTOR  |        | D1005    | 1SS353       | DIODE       |
|             | Q1219    | 2SC2412K(QR) | TRANSISTOR  |        | D1006    | 1SS353       | DIODE       |
|             | Q1220    | 2SC2412K(QR) | TRANSISTOR  |        | D1007    | 1SS353       | DIODE       |
|             | Q1222    | 2SC2412K(QR) | TRANSISTOR  |        | D1008    | 1SS353       | DIODE       |
|             | Q1223    | 2SC2412K(QR) | TRANSISTOR  |        | D1009    | 1SS353       | DIODE       |
|             | Q1224    | 2SC2412K(QR) | TRANSISTOR  |        | D1010    | 1SS353       | DIODE       |
|             | Q1225    | 2SC2412K(QR) | TRANSISTOR  |        | D1011    | 1SS353       | DIODE       |
|             | Q1301    | 2SC2412K(QR) | TRANSISTOR  |        | D1012    | 1SS353       | DIODE       |
|             | Q1302    | 2SC2412K(QR) | TRANSISTOR  |        | D1013    | 1SS353       | DIODE       |
|             | Q1304    | 2SC2412K(QR) | TRANSISTOR  |        | D1014    | 1SS353       | DIODE       |
|             | Q1305    | 2SC2412K(QR) | TRANSISTOR  |        | D1015    | 1SS353       | DIODE       |
|             | Q1306    | 2SC2412K(QR) | TRANSISTOR  |        | D1016    | 1SS353       | DIODE       |
|             | Q1307    | 2SC2412K(QR) | TRANSISTOR  |        | D1017    | 1SS353       | DIODE       |
|             | Q1310    | DTC144EKA-X  | TRANSISTOR  |        | D1018    | 1SS353       | DIODE       |
|             |          |              |             |        | D1019    | 1SS353       | DIODE       |

[illegible]

| Ref. No. | Part No.     | Description         | Ref. No. | Part No.     | Description         |
|----------|--------------|---------------------|----------|--------------|---------------------|
| R1030    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1239    | QRSA08J0R0YL | M 0 OHM, J, 1/10W   |
| R1031    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1240    | QRSA08J821YL | M 820 OHM, J, 1/10W |
| R1032    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1241    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1033    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1242    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1034    | QRSA08J150YL | M 15 OHM, J, 1/10W  | R1243    | QRSA08J392YL | M 3.9KOHM, J, 1/10W |
| R1035    | QRSA08J821YL | M 820 OHM, J, 1/10W | R1246    | QRSA08J221YL | M 220 OHM, J, 1/10W |
| R1036    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1247    | QRSA08J152YL | M 1.5KOHM, J, 1/10W |
| R1037    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1248    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1038    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1249    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1039    | QRSA08J150YL | M 15 OHM, J, 1/10W  | R1250    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1040    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1251    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1041    | QRSA08J821YL | M 820 OHM, J, 1/10W | R1252    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1042    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1253    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1043    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1254    | QRSA08J750YL | M 75 OHM, J, 1/10W  |
| R1044    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1255    | QRSA08J221YL | M 220 OHM, J, 1/10W |
| R1045    | QRSA08J150YL | M 15 OHM, J, 1/10W  | R1256    | QRSA08J154YL | M 150KOHM, J, 1/10W |
| R1046    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1257    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1047    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1258    | QRSA08J821YL | M 820 OHM, J, 1/10W |
| R1048    | QRSA08J221YL | M 220 OHM, J, 1/10W | R1259    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1049    | QRSA08J683YL | M 68KOHM, J, 1/10W  | R1260    | QRSA08J151YL | M 150 OHM, J, 1/10W |
| R1051    | QRSA08J0R0YL | M 0 OHM, J, 1/10W   | R1261    | QRSA08J682YL | M 6.8KOHM, J, 1/10W |
| R1052    | QRSA08J823YL | M 82KOHM, J, 1/10W  | R1262    | QRSA08J822YL | M 8.2KOHM, J, 1/10W |
| R1101    | QRSA08J101YL | M 100 OHM, J, 1/10W | R1263    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1102    | QRSA08J154YL | M 150KOHM, J, 1/10W | R1264    | QRSA08J272YL | M 2.7KOHM, J, 1/10W |
| R1103    | QRSA08J104YL | M 100KOHM, J, 1/10W | R1265    | QRSA08J101YL | M 100 OHM, J, 1/10W |
| R1104    | QRSA08J332YL | M 3.3KOHM, J, 1/10W | R1266    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1105    | QRSA08J101YL | M 100 OHM, J, 1/10W | R1267    | QRSA08J333YL | M 33KOHM, J, 1/10W  |
| R1106    | QRSA08J154YL | M 150KOHM, J, 1/10W | R1268    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1107    | QRSA08J104YL | M 100KOHM, J, 1/10W | R1269    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1108    | QRSA08J332YL | M 3.3KOHM, J, 1/10W | R1270    | QRSA08J561YL | M 560 OHM, J, 1/10W |
| R1109    | QRSA08J563YL | M 56KOHM, J, 1/10W  | R1271    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1110    | QRSA08J104YL | M 100KOHM, J, 1/10W | R1272    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1111    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1273    | QRSA08J821YL | M 820 OHM, J, 1/10W |
| R1112    | QRSA08J101YL | M 100 OHM, J, 1/10W | R1274    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1113    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1275    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1114    | QRSA08J562YL | M 5.6KOHM, J, 1/10W | R1280    | QRSA08J182YL | M 1.8KOHM, J, 1/10W |
| R1115    | QRSA08J222YL | M 2.2KOHM, J, 1/10W | R1281    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1116    | QRSA08J750YL | M 75 OHM, J, 1/10W  | R1282    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1117    | QRSA08J750YL | M 75 OHM, J, 1/10W  | R1283    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1118    | QRSA08J101YL | M 100 OHM, J, 1/10W | R1284    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1201    | QRSA08J182YL | M 1.8KOHM, J, 1/10W | R1285    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1202    | QRSA08J122YL | M 1.2KOHM, J, 1/10W | R1286    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1203    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1287    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1204    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1288    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1205    | QRSA08J102YL | M 1KOHM, J, 1/10W   | R1289    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1206    | QVPC611102HZ | CONTROL 1KOHMB      | R1301    | QRSA08J101YL | M 100 OHM, J, 1/10W |
| R1207    | QRSA08J331YL | M 330 OHM, J, 1/10W | R1302    | QRSA08J393YL | M 39KOHM, J, 1/10W  |
| R1208    | QRSA08J331YL | M 330 OHM, J, 1/10W | R1303    | QRSA08J124YL | M 120KOHM, J, 1/10W |
| R1209    | QRSA08J222YL | M 2.2KOHM, J, 1/10W | R1304    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1210    | QRSA08J102YL | M 1KOHM, J, 1/10W   | R1305    | QRSA08J561YL | M 560 OHM, J, 1/10W |
| R1211    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1306    | QRSA08J561YL | M 560 OHM, J, 1/10W |
| R1212    | QRSA08J221YL | M 220 OHM, J, 1/10W | R1307    | QRSA08J271YL | M 270 OHM, J, 1/10W |
| R1213    | QRSA08J221YL | M 220 OHM, J, 1/10W | R1308    | QRSA08J271YL | M 270 OHM, J, 1/10W |
| R1214    | QRSA08J221YL | M 220 OHM, J, 1/10W | R1309    | QRSA08J153YL | M 15KOHM, J, 1/10W  |
| R1215    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1310    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1218    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1311    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1219    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1318    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1222    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1319    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1223    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1320    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1224    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1321    | QRSA08J122YL | M 1.2KOHM, J, 1/10W |
| R1225    | QRSA08J151YL | M 150 OHM, J, 1/10W | R1322    | QRSA08J122YL | M 1.2KOHM, J, 1/10W |
| R1226    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1323    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1227    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1324    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1228    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1325    | QRSA08J821YL | M 820 OHM, J, 1/10W |
| R1232    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1326    | QRSA08J152YL | M 1.5KOHM, J, 1/10W |
| R1233    | QRSA08J153YL | M 15KOHM, J, 1/10W  | R1327    | QRSA08J821YL | M 820 OHM, J, 1/10W |
| R1234    | QRSA08J822YL | M 8.2KOHM, J, 1/10W | R1328    | QRSA08J821YL | M 820 OHM, J, 1/10W |
| R1235    | QRSA08J821YL | M 820 OHM, J, 1/10W | R1329    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1236    | QRSA08J102YL | M 1KOHM, J, 1/10W   | R1330    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1237    | QRSA08J821YL | M 820 OHM, J, 1/10W | R1331    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |

| Ref. No. | Part No.     | Description         | Ref. No. | Part No.     | Description         |
|----------|--------------|---------------------|----------|--------------|---------------------|
| R1332    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1805    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1338    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1806    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1339    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1807    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1340    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1808    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1341    | QRSA08J391YL | M 390 OHM, J, 1/10W | R1810    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1342    | QRSA08J391YL | M 390 OHM, J, 1/10W | R1811    | QRSA08J563YL | M 56KOHM, J, 1/10W  |
| R1343    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1812    | QRSA08J683YL | M 68KOHM, J, 1/10W  |
| R1344    | QVPC611202HZ | CONTROL 20KOHMB     | R1813    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1345    | QRSA08J471YL | M 470 OHM, J, 1/10W | R1814    | QRSA08J684YL | M 680KOHM, J, 1/10W |
| R1347    | QRSA08J224YL | M 220KOHM, J, 1/10W | R1815    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1348    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1816    | QRSA08J151YL | M 150 OHM, J, 1/10W |
| R1349    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1817    | QRSA08J822YL | M 8.2KOHM, J, 1/10W |
| R1350    | QRSA08J223YL | M 22KOHM, J, 1/10W  | R1818    | QRSA08J273YL | M 27KOHM, J, 1/10W  |
| R1354    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1819    | QRSA08J681YL | M 680 OHM, J, 1/10W |
| R1355    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1820    | QRSA08J681YL | M 680 OHM, J, 1/10W |
| R1356    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1821    | QRSA08J331YL | M 330 OHM, J, 1/10W |
| R1357    | QRSA08J684YL | M 680KOHM, J, 1/10W | R1822    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1358    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1823    | QRSA08J223YL | M 22KOHM, J, 1/10W  |
| R1359    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1824    | QRSA08J123YL | M 12KOHM, J, 1/10W  |
| R1360    | QRSA08J102YL | M 1KOHM, J, 1/10W   | R1825    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1361    | QRSA08J681YL | M 680 OHM, J, 1/10W | R1826    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1362    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1828    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1363    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1830    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1364    | QRSA08J332YL | M 3.3KOHM, J, 1/10W | R1831    | QRSA08J562YL | M 5.6KOHM, J, 1/10W |
| R1365    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1832    | QRSA08J183YL | M 18KOHM, J, 1/10W  |
| R1366    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1833    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1367    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1834    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1368    | QRSA08J392YL | M 3.9KOHM, J, 1/10W | R1835    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1369    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1836    | QRSA08J393YL | M 39KOHM, J, 1/10W  |
| R1370    | QRSA08J272YL | M 2.7KOHM, J, 1/10W | R1837    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1371    | QRSA08J222YL | M 2.2KOHM, J, 1/10W | R1838    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R1372    | QRSA08J152YL | M 1.5KOHM, J, 1/10W | R1839    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R1373    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1841    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1374    | QRSA08J563YL | M 56KOHM, J, 1/10W  | R1842    | QRSA08J564YL | M 560KOHM, J, 1/10W |
| R1375    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1843    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1376    | QRSA08J104YL | M 100KOHM, J, 1/10W | R1844    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1377    | QRSA08J393YL | M 39KOHM, J, 1/10W  | R1845    | QRSA08J273YL | M 27KOHM, J, 1/10W  |
| R1378    | QRSA08J750YL | M 75 OHM, J, 1/10W  | R1846    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1379    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1847    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1380    | QRSA08J821YL | M 820 OHM, J, 1/10W | R1848    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1381    | QRD122J151S  | C 150 OHM, J, 1/2W  | R1849    | QRSA08J273YL | M 27KOHM, J, 1/10W  |
| R1390    | QRSA08J562YL | M 5.6KOHM, J, 1/10W | R1850    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1391    | QRSA08J682YL | M 6.8KOHM, J, 1/10W | R1851    | QRSA08J332YL | M 3.3KOHM, J, 1/10W |
| R1392    | QRSA08J222YL | M 2.2KOHM, J, 1/10W | R1852    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1393    | QRSA08J562YL | M 5.6KOHM, J, 1/10W | R1853    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1394    | QRSA08J681YL | M 680 OHM, J, 1/10W | R1854    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1395    | QRSA08J681YL | M 680 OHM, J, 1/10W | R1855    | QRSA08J563YL | M 56KOHM, J, 1/10W  |
| R1396    | QRSA08J393YL | M 39KOHM, J, 1/10W  | R1856    | QRSA08J563YL | M 56KOHM, J, 1/10W  |
| R1601    | QRSA08J153YL | M 15KOHM, J, 1/10W  | R1857    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1602    | QRSA08J124YL | M 120KOHM, J, 1/10W | R1858    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1603    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1859    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1604    | QRSA08J823YL | M 82KOHM, J, 1/10W  | R1860    | QRSA08J273YL | M 27KOHM, J, 1/10W  |
| R1605    | QRSA08J153YL | M 15KOHM, J, 1/10W  | R1861    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1606    | QRSA08J124YL | M 120KOHM, J, 1/10W | R1862    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1607    | QRSA08J823YL | M 82KOHM, J, 1/10W  | R1863    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1608    | QRSA08J472YL | M 4.7KOHM, J, 1/10W | R1864    | QRSA08J563YL | M 56KOHM, J, 1/10W  |
| R1609    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1865    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1611    | QRSA08J272YL | M 2.7KOHM, J, 1/10W | R1866    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1612    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R1867    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1613    | QRSA08J0R0YL | M 0 OHM, J, 1/10W   | R1869    | QRSA08J333YL | M 33KOHM, J, 1/10W  |
| R1616    | QRD12CJ271SX | C 270 OHM, J, 1/2W  | R1870    | QRSA08J221YL | M 220 OHM, J, 1/10W |
| R1617    | QRSA08J222YL | M 2.2KOHM, J, 1/10W | R1871    | QRD122J151S  | C 150 OHM, J, 1/2W  |
| R1618    | QRSA08J391YL | M 390 OHM, J, 1/10W | R1873    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1619    | QRSA08J123YL | M 12KOHM, J, 1/10W  | R1874    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1620    | QRD14CJ470SX | C 47 OHM, J, 1/4W   | R1875    | QRSA08J473YL | M 47KOHM, J, 1/10W  |
| R1622    | QRSA08J102YL | M 1KOHM, J, 1/10W   | R1876    | QRSA08J104YL | M 100KOHM, J, 1/10W |
| R1623    | QRSA08J0R0YL | M 0 OHM, J, 1/10W   | R1877    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R1801    | QRSA08J331YL | M 330 OHM, J, 1/10W | R2301    | QRD161J221Y  | C 220 OHM, J, 1/6W  |
| R1802    | QRSA08J103YL | M 10KOHM, J, 1/10W  | R2302    | QRD161J102Y  | C 1KOHM, J, 1/6W    |
| R1803    | QRSA08J333YL | M 33KOHM, J, 1/10W  | R2303    | QVPE805-103H | VARIABLE RESISTOR   |
| R1804    | QRSA08J182YL | M 1.8KOHM, J, 1/10W | R2304    | QRG029J822   | M 8.2KOHM, J, 2W    |

| Ref. No. | Part No.     | Description        | Ref. No. | Part No.     | Description         |
|----------|--------------|--------------------|----------|--------------|---------------------|
| R2305    | QRC121K332Z  | C 3.3KOHM, K, 1/2W | R2511    | QRD161J222Y  | C 2.2KOHM, J, 1/6W  |
| R2306    | QVPE805-201H | VARIABLE RESISTOR  | R2512    | QRD161J223Y  | C 22KOHM, J, 1/6W   |
| R2307    | QRD161J101Y  | C 100 OHM, J, 1/6W | R2513    | QRD161J222Y  | C 2.2KOHM, J, 1/6W  |
| R2308    | QRD161J221Y  | C 220 OHM, J, 1/6W | R2514    | QVPC611103HZ | VARIABLE RESISTOR   |
| R2311    | QRD161J221Y  | C 220 OHM, J, 1/6W | R2515    | QRD161J682Y  | C 6.8KOHM, J, 1.6W  |
| R2312    | QRD161J102Y  | C 1KOHM, J, 1/6W   | R2516    | QRV141F2701A | M 2.7KOHM, F, 1/4W  |
| R2313    | QVPE805-103H | VARIABLE RESISTOR  | R2517    | QRV141F6801A | M 6.8KOHM, F, 1/4W  |
| R2314    | QRG029J822   | M 8.2KOHM, J, 2W   | R2518    | QRZ00544R7M  | F 4.7 OHM, J, 1/4W  |
| R2315    | QRC121K332Z  | C 3.3KOHM, K, 1/2W | R2519    | QRH017J150M  | F 15 OHM, J, 1W     |
| R2316    | QVPE805-201H | VARIABLE RESISTOR  | R2520    | QRD161J2R7Y  | C 2.7 OHM, J, 1/6W  |
| R2317    | QRD161J101Y  | C 100 OHM, J, 1/6W | R2521    | QRH017J3R3M  | F 3.3 OHM, J, 1W    |
| R2318    | QRD161J222Y  | C 2.2KOHM, J, 1/6W | R2522    | QRD161J124Y  | C 120KOHM, J, 1/6W  |
| R2321    | QRD161J221Y  | C 220 OHM, J, 1/6W | R2523    | QRD161J154Y  | C 150KOHM, J, 1/6W  |
| R2322    | QRD161J102Y  | C 1KOHM, J, 1/6W   | R2524    | QRD121J472SY | C 4.7KOHM, J, 1/2W  |
| R2323    | QVPE805-103H | VARIABLE RESISTOR  | R2525    | QRD121J181SY | C 180 OHM, J, 1/2W  |
| R2324    | QRG029J822   | M 8.2KOHM, J, 2W   | R2526    | QRD161J391Y  | C 390 OHM, J, 1/6W  |
| R2325    | QRC121K332Z  | C 3.3KOHM, K, 1/2W | R2527    | QRD161J151Y  | C 150 OHM, J, 1/6W  |
| R2326    | QRD161J101Y  | C 100 OHM, J, 1/6W | R2528    | QRD121J561SY | C 560 OHM, J, 1/2W  |
| R2327    | QRD161J101Y  | C 100 OHM, J, 1/6W | R2529    | QRZ00542R2M  | F 2.2OHM, J, 1/4W   |
| R2346    | QRC121K474Z  | C 470KOHM, K, 1/2W | R2530    | QRX019J5R6S  | M 5.6 OHM, J, 1W    |
| R2347    | QRC121K332Z  | C 3.3KOHM, K, 1/2W | R2531    | QRG029J331   | M 330 OHM, J, 2W    |
| R2348    | QRC121K565Z  | C 5.6MOHM, K, 1/2W | R2532    | QRG019J122S  | M 1.2KOHM, J, 1W    |
| R2401    | QRD161J153Y  | C 15KOHM, J, 1/6W  | R2533    | QRC019J681S  | M 680 OHM, J, 1W    |
| R2402    | QRD161J103Y  | C 10KOHM, J, 1/6W  | R2545    | QRD161J102Y  | C 1KOHM, J, 1/6W    |
| R2403    | QRD161J272Y  | C 2.7KOHM, J, 1/6W | R2546    | QRD121J153SY | C 15KOHM, J, 1/2W   |
| R2404    | QRD161J822Y  | C 8.2KOHM, J, 1/6W | R2902    | QRF074K3R3   | F 3.3OHM K, 7W      |
| R2405    | QRD121J121SY | C 120 OHM, J, 1/2W | R2903    | QRC039J223   | M 22KOHM, J, 3W     |
| R2406    | QRD161J473Y  | C 47KOHM, J, 1/6W  | R2904    | QRD121J184SY | C 180KOHM, J, 1/2W  |
| R2407    | QRD161J152Y  | C 1.5KOHM, J, 1/6W | R2906    | QRC029J473   | M 47KOHM, J, 2W     |
| R2408    | QRD161J103Y  | C 10KOHM, J, 1/6W  | R2909    | QRM059J-R33  | M 0.33 OHM, J, 9W   |
| R2409    | QRD161J272Y  | C 2.7KOHM, J, 1/6W | R2911    | QRZ00544R7M  | F 4.7 OHM, J, 1/4W  |
| R2410    | QRD161J682Y  | C 6.8KOHM, J, 1.6W | R2932    | QRX019J1R0S  | M 1.0 OHM, J, 1W    |
| R2411    | QRD161J122Y  | C 1.2KOHM, J, 1/6W | R2934    | QRD121J272SY | C 2.7KOHM, J, 1/2W  |
| R2412    | QRD161J822Y  | C 8.2KOHM, J, 1/6W | R2935    | QRD121J223SY | C 22KOHM, J, 1/2W   |
| R2413    | QRD161J273Y  | C 27KOHM, J, 1/6W  | R2936    | QRD161J223Y  | C 22KOHM, J, 1/6W   |
| R2414    | QRD161J331Y  | C 330 OHM, J, 1/6W | R2938    | QRD121J562SY | C 5.6KOHM, J, 1/2W  |
| R2415    | QVPC611501HZ | CONTROL 500OHMB    | R2940    | QRD161J223Y  | C 22KOHM, J, 1/6W   |
| R2416    | QRD161J0R0Y  | C 0 OHM, J, 1/6W   | R2941    | QRD161J223Y  | C 22KOHM, J, 1/6W   |
| R2417    | QVPC611501HZ | CONTROL 500OHMB    | R2942    | QRD161J103Y  | C 10KOHM, J, 1/6W   |
| R2418    | QRD161J153Y  | C 15KOHM, J, 1/6W  | R2943    | QRD161J333Y  | C 33KOHM, J, 1/6W   |
| R2419    | QRD161J103Y  | C 10KOHM, J, 1/6W  | R2944    | QRD161J563Y  | C 56KOHM, J, 1/6W   |
| R2420    | QVPC611102HZ | CONTROL 1KOHMB     | R2945    | QRD161J683Y  | C 68KOHM, J, 1/6W   |
| R2421    | QRX019J4R7S  | M 4.7OHM, J, 1W    | R2946    | QRD161J473Y  | C 47KOHM, J, 1/6W   |
| R2422    | QRD161J103Y  | C 10KOHM, J, 1/6W  | R2961    | QRZ0054180M  | F 18 OHM, J, 1/4W   |
| R2423    | QRD161J153Y  | C 15KOHM, J, 1/6W  | R2968    | QRC029J471   | M 470 OHM, J, 2W    |
| R2424    | QRD161J103Y  | C 10KOHM, J, 1/6W  | R2970    | QRD161J151Y  | C 150 OHM, J, 1/6W  |
| R2426    | QRD121J331SY | C 330 OHM, J, 1/2W | R2973    | QRC029J681A  | M 680 OHM, J, 2W    |
| R2427    | QVPC611501HZ | CONTROL 500OHMB    | R2977    | QRZ00542R2M  | F 2.2OHM, J, 1/4W   |
| R2428    | QRD121J331SY | C 330 OHM, J, 1/2W | R2978    | QRZ0057825   | C 8.2M OHM, J, 1W   |
| R2429    | QRD121J102SY | C 1KOHM, J, 1/2W   | R2979    | QRD161J560Y  | C 56 OHM, J, 1/6W   |
| R2430    | QRD161J684Y  | C 680KOHM, J, 1/6W | R4001    | QRSA08J183YL | M 18KOHM, J, 1/10W  |
| R2431    | QRD161J823Y  | C 82KOHM, J, 1/6W  | R4002    | QVGA004CB14A | CONTROL 10KOHMB     |
| R2432    | QRD161J473Y  | C 47KOHM, J, 1/6W  | R4003    | QRSA08J0R0YL | M 0 OHM, J, 1/10W   |
| R2433    | QRD161J564Y  | C 560KOHM, J, 1/6W | R4004    | QRSA08J222YL | M 2.2KOHM, J, 1/10W |
| R2434    | QRD161J104Y  | C 100KOHM, J, 1/6W | R4006    | QVPC611103HZ | VARIABLE RESISTOR   |
| R2436    | QRD161J473Y  | C 47KOHM, J, 1/6W  | R4007    | QVGA003CB14A | CONTROL 10KOHMB     |
| R2437    | QRD161J473Y  | C 47KOHM, J, 1/6W  | R4008    | QRSA08J272YL | M 2.7KOHM, J, 1/10W |
| R2438    | QRD121J222SY | C 2.2KOHM, J, 1/2W | R4009    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R2439    | QRD161J334Y  | C 330KOHM, J, 1/6W | R4010    | QVGA003CB14A | CONTROL 10KOHMB     |
| R2440    | QRD161J334Y  | C 330KOHM, J, 1/6W | R4012    | QVPC611103HZ | VARIABLE RESISTOR   |
| R2501    | QRD161J101Y  | C 100 OHM, J, 1/6W | R4013    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R2502    | QRD161J683Y  | C 68KOHM, J, 1/6W  | R4015    | QVPC611103HZ | VARIABLE RESISTOR   |
| R2503    | QRD161J472Y  | C 4.7KOHM, J, 1/6W | R4016    | QRSA08J102YL | M 1KOHM, J, 1/10W   |
| R2504    | QRD161J183Y  | C 18KOHM, J, 1/6W  | R4017    | QRSA08J103YL | M 10KOHM, J, 1/10W  |
| R2505    | QRD161J153Y  | C 15KOHM, J, 1/6W  | R4018    | QRSA08J222YL | M 2.2KOHM, J, 1/10W |
| R2506    | QRD161J472Y  | C 4.7KOHM, J, 1/6W | R4019    | QRSA08J393YL | M 39KOHM, J, 1/10W  |
| R2507    | QRD161J123Y  | C 12KOHM, J, 1/6W  | R4020    | QVGA003CB14A | CONTROL 10KOHMB     |
| R2508    | QRD161J683Y  | C 68KOHM, J, 1/6W  | R4021    | QRSA08J472YL | M 4.7KOHM, J, 1/10W |
| R2509    | QRD161J103Y  | C 10KOHM, J, 1/6W  | R4022    | QVPC611103HZ | VARIABLE RESISTOR   |
| R2510    | QVPC611502HZ | CONTROL 5KOHMB     |          |              |                     |

| Ref. No.   | Part No.     | Description         | Ref. No. | Part No.     | Description       |
|------------|--------------|---------------------|----------|--------------|-------------------|
| R4024      | QRSA08J0R0YL | M 0 OHM, J, 1/10W   | C1108    | QETC1CM107Z  | E 100UF, M, 16V   |
| R4025      | QVGA003CB14A | CONTROL 10KOHMB     | C1109    | NCT03CH470AY | C 47PF, J, 50V    |
| R4026      | QVPC611103HZ | VARIABLE RESISTOR   | C1201    | NCT03CH680AY | C 68PF, J, 50V    |
| R4027      | QRSA08J221YL | M 220 OHM, J, 1/10W | C1202    | QETC1CM107Z  | E 100UF, M, 16V   |
| R4028      | QRSA08J182YL | M 1.8KOHM, J, 1/10W | C1203    | QEN61HM105Z  | E 1UF, M, 50V     |
| R4029      | QVPC611502HZ | CONTROL 5KOHMB      | C1204    | NCT03CH181AY | C 180PF, J, 50V   |
| R4031      | QRSA08J183YL | M 18KOHM, J, 1/10W  | C1205    | QEN61CM476Z  | E 47UF, M, 16V    |
| R9901      | QRC122K105   | S 1M OHM, K, 1/2W   | C1206    | NCT03CH560AY | C 56PF, J, 50V    |
| R9905      | QRD161J563Y  | C 56KOHM, J, 1/6W   | C1207    | NCT03CH181AY | C 180PF, J, 50V   |
| R9908      | QRD121J101SY | C 100 OHM, J, 1/2W  | C1208    | QETC1HM105Z  | E 1UF, M, 50V     |
| R9910      | QRD161J151Y  | C 150 OHM, J, 1/6W  | C1209    | QETC1HM106Z  | E 10UF, M, 50V    |
| R9912      | QRD161J22Y   | C 1.2KOHM, J, 1/6W  | C1210    | QEN61CM476Z  | E 47UF, M, 16V    |
| R9914      | QRD161J103Y  | C 10KOHM, J, 1/6W   | C1211    | QETC1HM105Z  | E 1UF, M, 50V     |
| R9915      | QRD161J472Y  | C 4.7KOHM, J, 1/6W  | C1212    | NCT03CH470AY | C 47PF, J, 50V    |
| R9916      | QRD161J822Y  | C 8.2KOHM, J, 1/6W  | C1213    | QETC1HM105Z  | E 1UF, M, 50V     |
| R9917      | QRD161J122Y  | C 1.2KOHM, J, 1/6W  | C1214    | NCT03CH102AY | C 1000PF, J, 50V  |
| R9918      | QRD161J562Y  | C 22KOHM, J, 1/6W   | C1215    | QETC1HM105Z  | E 1UF, M, 50V     |
| R9919      | QRD161J562Y  | C 5.6KOHM, J, 1/6W  | C1216    | QEN61CM476Z  | E 47UF, M, 16V    |
| R9952      | QRD121J220SY | C 22 OHM, J, 1/2W   | C1217    | QEN61CM476Z  | E 47UF, M, 16V    |
| R9953      | QRD161J223Y  | C 22KOHM, J, 1/6W   | C1218    | QETC1HM475Z  | E 4.7UF, M, 50V   |
| R9954      | QRD161J332Y  | C 3.3KOHM, J, 1/6W  | C1219    | NCT03CH181AY | C 180PF, J, 50V   |
| R9955      | QRD161J562Y  | C 5.6KOHM, J, 1/6W  | C1220    | QETC1CM476Z  | E 47UF, M, 16V    |
| R9956      | QRD121J330SY | C 33 OHM, J, 1/2W   | C1221    | NCT03CH181AY | C 180PF, J, 50V   |
| R9957      | QRD161J103Y  | C 10KOHM, J, 1/6W   | C1222    | QETC1CM107Z  | E 100UF, M, 16V   |
| R9958      | QVPC611203HZ | VARIABLE RESISTOR   | C1223    | NCT03CH181AY | C 180PF, J, 50V   |
| R9959      | QRD161J103Y  | C 10KOHM, J, 1/6W   | C1224    | NCT03CH181AY | C 180PF, J, 50V   |
| R9960      | QRD161J223Y  | C 22KOHM, J, 1/6W   | C1225    | NCT03CH390AY | C 39PF, J, 50V    |
| R9962      | QRD161J681Y  | C 680 OHM, J, 1/6W  | C1226    | QAT3110450A  | T 45PF 100V       |
| R9963      | QRD161J102Y  | C 1KOHM, J, 1/6W    | C1227    | NCT03CH561AY | C 560PF, J, 50V   |
| R9964      | QRD161J471Y  | C 470 OHM, J, 1/6W  | C1228    | NCT03CH181AY | C 180PF, J, 50V   |
| R9965      | QRD161J103Y  | C 10KOHM, J, 1/6W   | C1229    | NCT03CH181AY | C 180PF, J, 50V   |
| R9966      | QRD161J472Y  | C 4.7KOHM, J, 1/6W  | C1230    | QETC1CM107Z  | E 100UF, M, 16V   |
| R9967      | QRD161J471Y  | C 470 OHM, J, 1/6W  | C1231    | NCB21HK103AY | C 0.01UF, K, 50V  |
| R9972      | QRV141F6801A | M 6.8KOHM, F, 1/4W  | C1232    | QETC1HM475Z  | E 4.7UF, M, 50V   |
| R9974      | QVPC611202HZ | CONTROL 20KOHMB     | C1233    | NCT03CH5R0AY | C 5PF, J, 50V     |
| R9975      | QRV141F1503A | M 150KOHM, F, 1/4W  | C1234    | QFV71HJ684MZ | F 0.68UF, J, 50V  |
| R9976      | QRD161J682Y  | C 6.8KOHM, J, 1.6W  | C1301    | NCB21HK103AY | C 0.01UF, K, 50V  |
| CAPACITORS |              |                     | C1302    | NCT03CH221AY | C 220PF, J, 50V   |
| C1001      | QETC1HM106Z  | E 10UF, M, 50V      | C1303    | QFV71HJ104MZ | P 0.1UF, J, 50V   |
| C1002      | QETC1CM107Z  | E 100UF, M, 16V     | C1305    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1003      | QFV71HJ104MZ | P 0.1UF, J, 50V     | C1306    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1004      | QETC1CM107Z  | E 100UF, M, 16V     | C1307    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1005      | QFV71HJ104MZ | P 0.1UF, J, 50V     | C1308    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1006      | QETC1CM107Z  | E 100UF, M, 16V     | C1309    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1007      | QFV71HJ104MZ | P 0.1UF, J, 50V     | C1311    | NCT03CH101AY | C 100PF, J, 50V   |
| C1008      | QETC1CM107Z  | E 100UF, M, 16V     | C1312    | QAT3110450A  | T 45PF 100V       |
| C1009      | QFV71HJ104MZ | P 0.1UF, J, 50V     | C1313    | QAT3110450A  | T 45PF 100V       |
| C1010      | QETC1CM337Z  | E 330UF, M, 16V     | C1314    | QAT3110450A  | T 45PF 100V       |
| C1011      | QFV71HJ104MZ | P 0.1UF, J, 50V     | C1315    | NCT03CH101AY | C 100PF, J, 50V   |
| C1012      | QETC1CM107Z  | E 100UF, M, 16V     | C1316    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1013      | QFV71HJ104MZ | P 0.1UF, J, 50V     | C1317    | NCT03CH221AY | C 220PF, J, 50V   |
| C1014      | QETC1HM105Z  | E 1UF, M, 50V       | C1318    | NCB21HK223AY | C 0.022UF, K, 50V |
| C1015      | NCB21HK103AY | C 0.01UF, K, 50V    | C1319    | NCT03CH101AY | C 100PF, J, 50V   |
| C1016      | QETC1CM337Z  | E 330UF, M, 16V     | C1320    | QETC1HM474Z  | E 0.47UF, M, 50V  |
| C1017      | QETC1CM337Z  | E 330UF, M, 16V     | C1321    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1018      | QETC1CM476Z  | E 47UF, M, 16V      | C1322    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1019      | QETC1CM337Z  | E 330UF, M, 16V     | C1323    | NCB21HK103AY | C 0.01UF, K, 50V  |
| C1101      | QETC1HM475Z  | E 4.7UF, M, 50V     | C1324    | QEN61CM106Z  | E 10UF, M, 16V    |
| C1102      | NCT03CH181AY | C 180PF, J, 50V     | C1325    | NCB21HK153AY | C 0.015UF, K, 50V |
| C1103      | QETC1HM475Z  | E 4.7UF, M, 50V     | C1327    | QAT3110450A  | T 45PF 100V       |
| C1104      | NCT03CH181AY | C 180PF, J, 50V     | C1328    | NCT03CH220AY | C 22PF, J, 50V    |
| C1105      | QETC1CM336Z  | E 33UF, M, 16V      | C1329    | QAT3110450A  | T 45PF 100V       |
| C1106      | QETC1CM336Z  | E 33UF, M, 16V      | C1330    | NCT03CH220AY | C 22PF, J, 50V    |
| C1107      | NCT03CH181AY | C 180PF, J, 50V     | C1331    | NCT03CH470AY | C 47PF, J, 50V    |
|            |              |                     | C1332    | NCB21HK103AY | C 0.01UF, K, 50V  |
|            |              |                     | C1335    | NCT03CH561AY | C 560PF, J, 50V   |
|            |              |                     | C1336    | QETC1CM337Z  | E 330UF, M, 16V   |
|            |              |                     | C1337    | NCB21HK103AY | C 0.01UF, K, 50V  |
|            |              |                     | C1338    | NCT03CH220AY | C 22PF, J, 50V    |

| Ref. No. | Part No.     | Description       | Ref. No. | Part No.     | Description        |
|----------|--------------|-------------------|----------|--------------|--------------------|
| C1339    | NCB21HK103AY | C 0.01UF, K, 50V  | C2504    | QETC1HM105Z  | E 1UF, M, 50V      |
| C1340    | NCT03CH390AY | C 39PF, J, 50V    | C2505    | QFP31HJ332SZ | P 3300PF, J, 50V   |
| C1341    | NCT03CH390AY | C 39PF, J, 50V    | C2506    | QFLC1HJ222MZ | M 2200PF, J, 50V   |
| C1342    | NCT03CH390AY | C 39PF, J, 50V    | C2507    | QETC1AM107Z  | E 100UF, M, 10V    |
| C1343    | NCT03CH390AY | C 39PF, J, 50V    | C2508    | QFV71HJ474MZ | F 0.47UF, J, 50V   |
| C1344    | NCT03CH151AY | C 150PF, J, 50V   | C2509    | QCS31HJ121AZ | C 120PF, J, 50V    |
| C1601    | QETC1HM105Z  | E 1UF, M, 50V     | C2510    | QFLC1HJ123MZ | M 0.012UF, J, 50V  |
| C1602    | QETC1HM105Z  | E 1UF, M, 50V     | C2511    | QETC1CM337Z  | E 330UF, M, 16V    |
| C1603    | NCT03CH390AY | C 39PF, J, 50V    | C2512    | QFLC1HJ393MZ | M 0.039UF, J, 50V  |
| C1604    | NCT03CH390AY | C 39PF, J, 50V    | C2513    | QFLC1HJ152MZ | M 1500PF, J, 50V   |
| C1605    | NCT03CH181AY | C 180PF, J, 50V   | C2514    | QCS31HJ151AZ | C 150PF, J, 50V    |
| C1606    | NCT03CH181AY | C 180PF, J, 50V   | C2515    | QETC1VM107Z  | C 100PF, M, 35V    |
| C1608    | QETC1HM105Z  | E 1UF, M, 50V     | C2516    | QCY32HK102R  | C 1000PF, 500V     |
| C1609    | QETC1CM337Z  | E 330UF, M, 16V   | C2517    | QETC1EM477Z  | E 470UF, M, 25V    |
| C1610    | NCT03CH102AY | C 1000PF, J, 50V  | C2518    | QCY32HK102R  | C 1000PF, 500V     |
| C1611    | QETC1HM475Z  | E 4.7UF, M, 50V   | C2519    | QETB1VM108   | E 1000PF, M, 35V   |
| C1612    | QETC1HM106Z  | E 10UF, M, 50V    | C2520    | QFV71HJ124MZ | F 0.12UF, J, 50V   |
| C1613    | QEH1EM108MZ  | E 1000UF, M, 25V  | C2521    | QETC1CM476Z  | E 47UF, M, 16V     |
| C1614    | QETC1AM337Z  | C 330UF, M, 10V   | C2522    | QETC1CM477Z  | E 470UF, M, 16V    |
| C1615    | NCS21HJ391AY | C 390PF, J, 50V   | C2523    | QCY32HK102R  | C 1000PF, 500V     |
| C1616    | NCS21HJ391AY | C 390PF, J, 50V   | C2524    | QETC1HM474Z  | E 0.47UF, M, 50V   |
| C1617    | NCB21HK473AY | C 0.047UF, K, 50V | C2525    | QFLC1HJ473MZ | M 0.047UF, J, 50V  |
| C1801    | QETC1CM107Z  | E 100UF, M, 16V   | C2526    | QETC1HM106Z  | E 10UF, M, 50V     |
| C1802    | NCT03CH181AY | C 180PF, J, 50V   | C2527    | QFLC2AK472MZ | M 4700PF, K, 100V  |
| C1803    | NCB21HK102AY | C 1000PF, K, 50V  | C2528    | QFLC2AK822MZ | M 8200PF, K, 100V  |
| C1804    | QETC1HM105Z  | E 1UF, M, 50V     | △ C2530  | QFZ01173801S | P 3800PF, 1.4KV    |
| C1805    | NCT03CH181AY | C 180PF, J, 50V   | C2531    | QFM72DK103M  | M 0.01UF, K, 200V  |
| C1807    | QFV71HJ334MZ | P 0.33UF, J, 50V  | C2532    | QFLC2AK563MZ | M 0.056UF, K, 100V |
| C1808    | QETC1HM335Z  | E 3.3UF, M, 50V   | C2533    | QETC2EM106   | E 10UF, M, 250V    |
| C1809    | NCB21HK472AY | C 4700PF, K, 50V  | C2534    | QFZ0119224S  | P 0.22UF, 200V     |
| C1810    | NCB21HK102AY | C 1000PF, K, 50V  | △ C2907  | QCZ9034-472A | CERAMIC CAP        |
| C1811    | NCT03CH221AY | C 220PF, J, 50V   | △ C2908  | QCZ9034-472A | CERAMIC CAP        |
| C1812    | NCT03CH102AY | C 1000PF, J, 50V  | △ C2909  | QCZ9034-472A | CERAMIC CAP        |
| C1813    | NCB21HK153AY | C 0.015UF, K, 50V | △ C2910  | QCZ9034-472A | CERAMIC CAP        |
| C1814    | NCB21HK222AY | C 2200PF, K, 50V  | C2911    | QEZ0199227R  | E 220UF, 200V      |
| C1815    | NCT03CH101AY | C 100PF, J, 50V   | C2912    | QCF22HP103M  | C 0.01UF, P, 500V  |
| C1816    | NCT03CH470AY | C 47PF, J, 50V    | C2913    | QCZ0122271U  | C 270PF, K, 2KV    |
| C1817    | NCT03CH390AY | C 39PF, J, 50V    | C2916    | QCZ0122151U  | C 150PF, K, 2KV    |
| C1818    | NCT03CH101AY | C 100PF, J, 50V   | C2918    | QCY32HK471RZ | C 470PF, K, 500V   |
| C1819    | QEN61CM476Z  | E 47UF, M, 16V    | C2923    | QETC1EM227Z  | E 220PF, M, 25V    |
| C1820    | NCT03CH560AY | C 56PF, J, 50V    | C2931    | QCY32HK681MZ | C 680PF, K, 500V   |
| C1821    | NCT03CH101AY | C 100PF, J, 50V   | C2932    | QETC1HM476Z  | E 47UF, M, 50V     |
| C1822    | NCB21HK562AY | C 5600PF, K, 50V  | C2934    | QCZ0122561A  | C 560PF, K, 2KV    |
| C1823    | NCT03CH102AY | C 1000PF, J, 50V  | C2936    | QEZ0203107   | E 100UF, 160V      |
| C2303    | QCS31HJ331AZ | C 330PF, J, 50V   | C2937    | QETC1CM107Z  | E 100UF, M, 16V    |
| C2304    | QCS31HJ391AZ | C 390PF, J, 50V   | C2938    | QFM72DK473M  | M 0.047UF, K, 200V |
| C2305    | QCS31HJ561AZ | C 560PF, J, 50V   | C2939    | QETC1CM476Z  | E 47UF, M, 16V     |
| C2306    | QEH1EM105MZ  | E 1UF, M, 250V    | C2940    | QEZ0203107   | E 100UF, 160V      |
| C2307    | QCZ0121-102M | C 1000PF, P, 3KV  | C2954    | QETC1HM335Z  | E 3.3UF, M, 50V    |
| C2309    | QEH1EM475MZ  | E 4.7UF, M, 250V  | C2959    | QFV71HJ224MZ | P 0.22UF, J, 50V   |
| C2310    | QEH1CM107MZ  | E 100UF, M, 16V   | C2961    | QCY31HK332AZ | C 3300PF, K, 50V   |
| C2402    | QFLC1HJ103MZ | M 0.01UF, J, 50V  | C2962    | QETB1HM227   | E 220UF, M, 50V    |
| C2403    | QETC1HM105Z  | E 1UF, M, 50V     | C2965    | QEM51EM337M  | E 330UF, M, 25V    |
| C2404    | QFLC1HJ682MZ | M 6800PF, J, 50V  | C2966    | QETC1CM227Z  | E 220UF, M, 16V    |
| C2405    | QETC1CM337Z  | E 330UF, M, 16V   | C2968    | QFLC1HJ472MZ | M 4700PF, J, 50V   |
| C2407    | QEE61VK105BZ | T 1UF, 35V        | C4001    | QER51CM226M  | E 22UF, M, 16V     |
| C2408    | QFLC1HJ223MZ | M 0.022UF, J, 50V | C4002    | QFV71HJ104MZ | P 0.1UF, J, 50V    |
| C2409    | QFLC1HJ103MZ | M 0.01UF, J, 50V  | △ C9901  | QFZ9036473M  | P 0.047UF, 250V    |
| C2410    | QFLC1HJ103MZ | M 0.01UF, J, 50V  | △ C9902  | QFZ9036473M  | P 0.047UF, 250V    |
| C2411    | QETC1HM225Z  | E 2.2UF, M, 50V   | △ C9904  | QCZ9033472A  | C 4700PF, M, 125V  |
| C2412    | QCY32HK471RZ | C 470PF, K, 500V  | △ C9905  | QCZ9033472A  | C 4700PF, M, 125V  |
| C2413    | QETC1HM107Z  | E 100UF, M, 50V   | △ C9906  | QCZ9033472A  | C 4700PF, M, 125V  |
| C2414    | QFLC1HJ223MZ | M 0.022UF, J, 50V | C9917    | QFLC1HJ562MZ | M 5600PF, J, 50V   |
| C2415    | QETC1HM106Z  | E 10UF, M, 50V    | C9919    | QETC1EM476Z  | E 47UF, M, 25V     |
| C2416    | QETC1EM477Z  | E 470UF, M, 25V   | C9920    | QFLC1HJ272MZ | M 2700PF, J, 50V   |
| C2417    | QETC1CM226Z  | E 22UF, M, 16V    | C9921    | QFLC1HJ332MZ | M 3300PF, J, 50V   |
| C2419    | QCS32HJ470AZ | C 47PF, J, 500    | C9922    | QCS31HJ821AZ | C 820PF, J, 50V    |
| C2501    | QETC1HM106Z  | E 10UF, M, 50V    | C9924    | QETC1HM105Z  | E 1UF, M, 50V      |
| C2502    | QFLC1HJ563MZ | M 0.056UF, J, 50V | C9925    | QETC1EM476Z  | E 47UF, M, 25V     |
| C2503    | QFLC1HJ682MZ | M 6800PF, J, 50V  | C9926    | QFLC1HJ122MZ | M 1200PF, J, 50V   |

[illegible]

